JUN 12 1926
Medical Lib

AMERICAN JOURNAL OF PUBLIC HEALTH

JUNE 1926
VOLUME XVI NUMBER 6

Control of Measles—*Godfrey*
Insecurity of Tenure—*Crumbine*
Health Supervision in Schools and Industry—*Sappington*
Child Health Conservation *Armstrong*
Cancer Mortality—*Green*

PUBLISHED BY THE
AMERICAN PUBLIC HEALTH ASSOCIATION
370 SEVENTH AVENUE, NEW YORK CITY
Office of Publication: 372 BROADWAY, ALBANY, N. Y.

GILLILAND BIOLOGICAL PRODUCTS

ANTITOXINS

Diphtheria Antitoxin, Tetanus Antitoxin, Scarlet Fever Antitoxin

VACCINES

Typhoid Vaccine, Typhoid-Paratyphoid Vaccine, Bacterial Vaccines, Rabies Vaccine (Pasteur Method), Vaccine Virus (Small-pox Vaccine)

MISCELLANEOUS PRODUCTS

Tuberculins, Schick Test, Culture Media, Silver Nitrate Solution, Diphtheria Toxin-Antitoxin Mixture

Special attention is given to furnishing State, City and County Departments of Health with Biological Products

Allow us to quote prices and submit proposals for supplying these Products

THE GILLILAND LABORATORIES

Incorporated

Producers of Biological Products

MARIETTA, PA.

Entered as second class matter at the post office at Albany, N. Y., March 7, 1918. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized March 3, 1923

American Journal of Public Health

VOLUME XVI JUNE, 1926 NUMBER 6

INSECURITY OF TENURE AN OBSTACLE TO PUBLIC HEALTH ADMINISTRATION*

S. J. CRUMBINE, M.D., FELLOW A.P.H.A.

General Executive American Child Health Association, New York City

OF THE present city, county and state health officers, I believe it would probably be in entire accord with the facts to say that few are holding their present positions because of a deliberate preparation for and a definite choice of a career in public health. On the contrary, most of us entered the field of public health in a more or less accidental fashion, without preliminary preparation or training. Even after the first appointment was confirmed, few of us cherished the ambition or entertained the hope that a public health career was assured or even entered, for most of us were perfectly conscious of at least two things: First, the uncertainty of tenure of office under our present political system; and second, our public health limitations because of lack of educational training and experience.

Most of us are alumni of the "school of experience," for until very recent years no other school for the training of health officers existed. Those who hurdled the numerous political pitfalls, passed the acid-test of professional and public approval, and finally secured the diploma of a "public health career," are few in number compared with the enrollment as freshmen in this school; for as in the case of human life, the infant mortality is exceedingly high and, alas, for the infant health officer there is no ambulance or hospital service available.

When we review the history of the development of public health in this country, we are amazed at the remarkable progress made despite the haphazard manner in which public health officers have come to be developed, and it is all the more amazing that interest in and enthusiasm for an ever-widening program that shall conform to advancing scientific knowledge has always characterized these poorly paid pioneers.

Whatever reasons might be given for this continuing and increasing interest in advancing the cause of public health and of maintaining its high ideals, that of security of tenure and adequate financial reward cannot be entertained, for admittedly, insecurity of tenure in office and low salaries have been the chief obstacles to a movement which under more favorable circumstances would have long ago demanded the highest type of trained administrative personnel at salaries commensurate with the value, importance and dignity of the professional service rendered.

Some of the most brilliant and greatest life-saving achievements in medicine have been in the field of prevention, and yet

* Read at the Joint Session of the American Public Health Association, American Child Health Association, National Organization for Public Health Nursing, and State and Provincial Health Authorities of North America, at the American Health Congress, at Atlantic City, N. J., May 21, 1926.

no branch of medicine is so poorly rewarded in material gains as is that of preventive medicine and public health. It cannot be said that the general public is unappreciative of real public health service; it is rather that they are not informed as a whole, and are therefore not really conscious of the benefits of public health endeavor. Moreover, that small minority who may know and value public health work find great difficulty in public expression of their appreciation, and thus it is that the uninformed and thoughtless majority, who are more or less molded in their thought and actions by those who are temporarily clothed with political authority, are either wholly indifferent or even antagonistic to public health work. To this group the position of health officer affords the useful purpose of rewarding the doctor of the triumphant political party for political service rendered.

Only party regularity and activity and a license to practice medicine are required as qualifying for appointment; and thus and in such manner have many of us become health officers.

Much has been accomplished towards removing one of the obstacles to a public health career; that is schools have been provided where one can secure a scientific and practical training in public health and hygiene; but, unfortunately, little or no progress has been made toward relieving public health development of its major handicap, insecurity of tenure of office! May not this fact be the chief reason why so few students have entered our training schools for the purpose of equipping themselves for a public health career?

There were 38 students in attendance at one of the larger schools for training health workers last year (1924–25), and of this number 27 were scholarship students, leaving 11 (of whom three were foreigners and probably scholarship students) as indicating the number of those who were willing to risk both their money and time in training for a public health career—not a very imposing showing. If we assume that the chief element in the motivation of a choice of a career is that of self-interest, it is logical to conclude that few have believed that advancement in self-interest lay in the direction of a public health career. When we look at the many promising public health careers that have suddenly and more or less rudely come to grief because of pure partisan politics and of the pathetic public health failures that have their root in the same cause and which have contributed so much to the lowering of public esteem and confidence in public health work and worker, one should not be surprised that so few of our promising young men are both deaf and blind to the blandishments of the public health enthusiast and the alluring prospects supposed to flow from the great centers of learning.

Nor can we hope that this situation will be appreciably improved until the major obstacle, the insecurity of tenure, is removed. What is the answer? Can the *baneful* effect of politics be minimized, and if so, how?

This question may not be properly approached if we fail to realize that under our present system of party government and the definite limitations held in the constitution of many states, public office of every description will be subjected in some degree, at least, to the pressure of political expediency and party advantage whenever that may seem possible. Nor should we overlook the immense advantage that often accrues to the cause of public health, when an intelligent friend of public health is temporarily clothed with great power and wielding that power advances the cause immeasurably. As in other realms of human activities, there are, now and again, compensatory results for which pure politics may properly claim credit and which serves to brighten an otherwise dark and ugly picture.

As a result of much thought on this subject, two suggestions are offered, in the hope that out of the discussion some practical methods may develop which

might be brought to bear on the solution of this all-important obstacle to public health work—insecurity of tenure.

The first suggestion is the conscientious use of the Appraisal Form, as recommended by the Committee on Administrative Practice of the American Public Health Association for evaluating the results of public health activities as: (a) a basis for comparison with other cities of similar size; (b) of checking efficiency of work; (c) in formulating a well-rounded health program with due consideration to the work and accomplishments of voluntary health agencies, and, most important of all, so far as it concerns our present theme; (d) to list the public health assets of the city in a way that the Chamber of Commerce, the newspapers and the man on the street may understand—to present the facts and record their relative value as expressed by professional group judgment, through the use of the Appraisal Form, thus revealing the strong and the weak places of the work, always keeping to the fore the fact that to a very considerable degree the community economic efficiency, happiness and health are conditioned on the scope and effectiveness of the health work of the community.

It is not intended to advocate that the Appraisal Form shall be a panacea for all the ills of public health administration, be they political or otherwise; nor is it claimed that there is special virtue or magic in its *perfunctory* use; but two results may reasonably be expected to flow from a fearless and thorough-going appraisal by the health officer of a city's liabilities and assets in health. The first is documentary proof, if such were needed, that the health officer is genuinely interested in the health conditions of his city and in ways and means for its improvement and betterment; second, a corollary of the first, that interference, political or otherwise, with an official whose devotion to duty is generally known and acknowledged, and who had shown sufficient courage to grapple with his problems as well as to display his accomplishments, would, from most every standpoint, be construed as unfriendly to the health interests of the city.

When citizens generally come to realize and really feel that political interference with efficient and interested health officers is an interference with their right to have the fullest measure of health protection, rather than a matter which concerns only the person of the health officer, the time will have arrived when that grass-root note of public disapproval concerning which the average politician has a very acute hearing, will operate to stay his hand from unwarranted, unjust and unholy interference. The conscientious use of the Appraisal Form will in my opinion hasten that day. There is accumulating evidence of the soundness of this theorem. Moreover, the absence of risk of unfavorable results in the faithful use of the Appraisal Form by the municipal health officers, should encourage the hope of its early trial by everyone interested in health administration and the security of tenure of office.

The second suggestion concerning a remedy which might be brought to bear on our problem under discussion concerns itself with a system of credits on life and industrial insurance rates, earned by cities for maintaining certain well defined and efficiently operating health protection measures, which have been shown to be more or less effective in the prevention of sickness and premature death.

This suggestion may appear, at first thought, impractical and visionary, if not revolutionary, yet a review of the evolution of fire preventive measures will show the economic justification and precedent for such a plan.

Following the Civil War there was an enormous increase in fire losses all over the United States. Many fire insurance companies were threatened with insolvency unless insurance rates were immediately raised or methods of fire prevention put into effective operation. Both of these expedients were adopted

and thus there were put into operation two distinct forces designed to become effective because of the economic interest involved to the property holder. Although each operated from a different angle, yet their final economic pressure was upon the same point—structures and personal belongings subject to destruction by fire.

The *first* step in fire prevention was that of the inspection of buildings, with the object of determining the remedial fire hazards. This later led to a crude system of evaluation and grading which has of later years been repeatedly revised and refined, so that now every detail of construction and fire liability or asset is clearly set down as a matter for permanent record in the office of the Fire Insurance Rating Bureau.

The *second* step in fire prevention was that of an appraisal of the city's means and measures for preventing and fighting fire. The development of this idea, too, has grown with the years, until now—paraphrasing Dr. Hermann M. Biggs' famous epigram—within certain limitations every city determines its own fire insurance rate.

It is interesting to note how the health appraisal form has developed along almost parallel lines with the fire prevention appraisal. Out of a total of 5,000 points as a perfect score in fire protection for a city, the following relative values are given to the major subdivisions:

Water supply	1,700
Fire department	1,500
Fire alarm	550
Police	50
Building laws	200
Hazards	300
Structural conditions	700
Total	5,000

Each of these 7 major subjects is divided into many items, each of which is the object of inspection and grading. For illustration: the matter of water supply is divided into 32 different items, demanding careful inspection and analysis. The fire department has 34 items upon which inspection must be passed for a perfect score, and so on through the entire 7 major subjects.

The fire hazard rating of the city, together with the so-called basic rate, determines the fire insurance rate for the city, which, with certain credits which the individual insured may secure by reason of special protective measures such as, for example, a sprinkling system in a factory or store building, fix the final fire insurance rate for each property insured.

No fire insurance company will insure any property against loss by fire without first consulting the rating of the city in which the property is located and the structural and geographical hazard of the property to be insured; the total of the liabilities and assets determines the rate charged for the assured.

The recognition of the economic soundness of the appraisal plan and its general adoption throughout this country has been stubbornly resisted by many municipalities and states, and, in some instances in the early history of the movement, by some of the insurance companies; but, as is the case of every economic or social reform that is sound in principle and practical in application, it has gradually forced recognition and adoption until today it is an accepted and standard procedure by the United States Chamber of Commerce and by all but a few of the states in the Union.

Is there economic justification for the proposal that the business of health protection be placed on the same sound business basis which is now the very foundation upon which modern fire insurance business rests? Let us analyze the economic losses involving property on the one hand and human life on the other, for the answer.

The fire losses, both partial and total for 1923 reached the enormous sum of $159,209,470.[1] In cities of 30,000 and over there was expended for various forms of fire protection the sum of $114,672,921,[2] or $2.93 per capita, to safeguard property from fire hazard.

In 1923 in cities of the United States Death Registration Area having a popu-

lation of 10,000 and over, there were 140,620 deaths from the so-called preventable diseases. We estimate 64,136 of these deaths to be preventable. Considering the average monetary loss caused by each death to be $6,000, the total loss due to these deaths is $384,816,000. This represents the amount of money which can be saved annually if existing knowledge of the control of communicable diseases be applied.

The above total figures are based on the data in Table I.

TABLE I

DEATHS FROM CERTAIN COMMUNICABLE DISEASES—U. S. DEATH REGISTRATION AREA—CITIES OF 10,000 INHABITANTS OR MORE IN 1920–1923

Cause of Death	Total Deaths—Cities in Registration Area—1923	Preventable Deaths—Cities in Registration Area—1923
Total Selected communicable diseases	140,620	64,136
Typhoid and Paratyphoid Fever	2,126	1,595
Smallpox	61	61
Measles	4,938	2,469
Scarlet Fever	1,771	886
Whooping Cough	3,978	1,989
Diphtheria	6,083	6,083
Tuberculosis—All Forms	42,947	21,474
Diarrhea and Enteritis (under 2)	15,230	13,707
Pneumonia—All Forms and Bronchitis	63,486	15,872

The preventability of these deaths is based on the estimates in Table II.

TABLE II

Cause of Death	Per cent Preventability
Typhoid Fever[1]	75
Smallpox	100
Measles	50
Scarlet Fever	50
Whooping Cough	50
Diphtheria	100
Tuberculosis—All Forms[2]	50
Diarrhea and Enteritis (under 2)	90
Pneumonia—All Forms and Bronchitis	25

1. Based on a comparison of adjusted death rates from typhoid fever in northern and southern states.
2. Based on the experience of the Framingham, Massachusetts, Demonstration.

It is reasonably certain that the savings in human life as outlined can be assured if modern preventive medicine and public health have a fair chance to apply effectively present knowledge.

It will be conceded that effective use of our present knowledge in the control of preventable disease is only possible through a modern health department, completely equipped with means and personnel, and unincumbered by interfering or inhibiting influences that so often thwart purpose and absorb effort.

More and more, departments of health are realizing that educational measures in disease control should include all the preventable diseases, as well as the communicable diseases, and already tremendous savings are being made in this field. Maternal and infant mortality, heart diseases, food deficiency diseases, and the long list of maladies due to various forms of focal infection and others are giving way to aggressive modern preventive medicine and public health work, of which no accounting is attempted at this time, but which, if added to the economic credits of health activities, would enormously swell the total.

It should be noted that the fire loss includes both partial and total loss by fire, where the life loss includes total loss only, or loss by death. It is needless to say that if the economic loss of preventable sickness and impairment to health were added—were it known—to the economic loss by death, the total would reach a staggering sum.

If, in addition, we should attempt to enumerate or evaluate the industrial and social wastes of preventable sickness and death, or to picture the human sorrow and tragedy that is an inevitable accompaniment, most of us would die of shock before our work would be completed. It is an impossible task!

There was expended for health protection, excluding hospitalization of tuberculosis and communicable diseases, in cities of 30,000 and over in 1923, the sum of $17,684,460,[3] or 45 cents per capita as against $2.93 per capita for fire protection.

It would be difficult to determine just why the protection of life and health in American cities has not commanded the same degree of interest, organization and expenditure of public funds as that of protection of property from fire, but this much can be said, as it is a matter of historical record, that the rapid progress in

the development of efficient means for fire protection is a direct result of the interest and continued activity of the National Board of Fire Underwriters.

A full-time staff of well-paid "high power" men is constantly applying all available scientific knowledge and inventive progress to the main project of fire prevention. Through the diligent use of the (fire) appraisal form upon which definite information is secured upon which fire rates are based, constant pressure is made to improve personnel and equipment for fighting fire and for reducing the fire hazard in structure and environment.

Has not the time arrived when life insurance companies may with profit to the companies and immeasurable profit to the cause of public health follow a similar plan in building up the health protective measures for the cities of America?

But what relation has such a plan to the general theme of insecurity of tenure due to unwarranted political interference in health administration?

The first five items in the fire insurance appraisal of the city fire department are as follows:

1. Number of officers
2. Number of operators
3. Qualifications of chief officers
4. Tenure of office of chief
5. Appointment and tenure of office of officers

A city which permits political appointments to be made in the case of the chief or officers of its fire department must suffer by adverse scores which bear on the fire rates for the city, and thus cities have almost universally abandoned the idea of using the fire department as a medium for paying political debts. It would be a political luxury which no city could afford and which the citizens would not long tolerate.

Not long ago a representative of the National Board of Fire Underwriters was asked what action, if any, they would take if the efficient chief of a fire department was removed without cause other than that of partisan politics. He replied that the city would be notified that such action would be construed as derogatory to the best interest of fire prevention, and if continued would be reflected in a recommendation for increase of fire rates for the city.

In the *New York Herald Tribune* of March 21, there appeared a feature story on "City Management." Among other illustrations as to how efficient management more than paid its own way through savings, was mentioned the case of the city manager of Dubuque, Iowa, who had built up such an efficient fire fighting and fire prevention program and personnel, and thus enormously reduced the fire hazards and actual fire losses, that the readjusted fire classification and rates for the city saved the insured $60,000 a year, quite a sum for a city of 40,000 population. One cannot visualize partisan politics as seriously interfering with such a city manager.

Does the proposal that life insurance companies undertake a similar task in the interest of their insured seem practical? Does not the development and use of the Appraisal Form to evaluate the health activities of the community serve as an approved instrument upon which to base certain credits or debits, and which with a basic rate will determine the industrial and life insurance rates of residents of the city?

Is not the health hazard of the people in a city with a pure water and a safe pasteurized milk supply greatly lessened? Will not the mortality from diphtheria be greatly reduced or perchance eliminated by an efficient health department continually and insistently immunizing preschool children with toxin-antitoxin? Will not deaths from tuberculosis be cut in half by the intelligent use of well known means if made available to an efficient health officer?

In an article in the November, 1925, *Survey Graphic*, under the title "Health Work Pays," Louis I. Dublin, the author, made the following statement:

For the past fifteen years a business organization, the Metropolitan Life Insurance Company, with which I am associated, has spent an average of more than a million dollars a year in its public health campaign for industrial policy-holders. This vast investment has reaped a return of 200 per cent; the money saving resulting from a lowered death rate which the company attributes to that campaign totals almost twice its cost.

We all concede that these results are within the realm of attainment if any city sincerely wishes to attain them; and we believe that much more rapid progress could be made in this direction if some plan similar to the fire insurance plan could be adopted, together with intensive field work, by a group of full-time field workers, whose business it would be to feature the economic importance of effective health work to the business interests of the country.

Unless the difficulties, and they are many, are really and actually insurmountable, it seems that any reasonable plan that gives promise of removing the present handicaps in whole or in part from public health administration, should receive our thoughtful consideration.

General Sir David Bruce, addressing the British Academy of Science about a year ago said: "Medicine of the future must change its strategy; instead of awaiting attack it must assume the offensive." This is the strategy of preventive medicine and modern public health—the offensive of prevention in cooperation with the commercial interests of the community. The mortality and disabling casualties of sickness are too great a hazard to risk, if by any means they can be prevented. The economic return in wealth production by the proper use of this strategy is so large and certain as to be an investment of the greatest value in dividends of longer, happier and more efficient lives, with a corresponding reduction in the cost of preventable sickness and premature death. What city, if it but understands, will not make such an investment?

Encouraging signs are everywhere present of the growing appreciation of modern public health work. Big business, industrial corporations, chambers of commerce, and thoughtful people generally are visualizing the relationship between economic progress and prosperity and the health of the worker and producer. Indeed, there are increasing numbers who are willing to subscribe to the dictum—which to the experienced health officer is axiomatic—that wealth production and economic prosperity are conditioned on the health of the worker. Therefore, the most important economic asset for any community is a full-time public health unit, provided with the means for carrying on a well-rounded program of activities along modern lines.

There seem to be grounds for the belief that the key to this much to be desired condition is through security of tenure of office for health officers, with adequate remuneration commensurate with the value of the services rendered.

SUMMARY

1. There have been two major handicaps to a successful career in public health: (a) lack of a technical training in public health administration, and (b) insecurity of tenure of office.

2. Excellent schools for the technical training of prospective health officers are now available, but the handicap of insecurity of tenure remains.

3. It is believed that insecurity of tenure and a low general average of salaries paid health officers are the chief reasons why so few capable young men are interested in a public health career.

4. Two suggestions offer themselves as remedies for insecurity of tenure: (a) that health officers make conscientious and courageous use of the Appraisal Form to list their cities' health assets and liabilities; and, (b) that industrial and life insurance companies consider the fire insurance plan of city and personal credits and classification for adoption in industrial and life insurance.

5. Security of tenure and freedom from unjust political interference, as assured to chiefs of fire departments under the fire insurance rating plan, should under the industrial and life insurance plan provide for similar guarantees for the health officer.

6. It is susceptible of proof that there is economic justification for both plans.

7. The economic importance and social life values involved are so great as to warrant early consideration of any plan that appears to offer a solution to this most important and vital problem.

REFERENCES

1. Proceedings of the Fifty-eighth Annual Meeting of the National Board of Fire Underwriters, May 22, 1924—Statistics of Fires in American Cities Having a Population of 30,000 and upward, 1923. Total loss, insured and uninsured—figures for 6 cities not available.

2. Financial Statistics of Cities Having a Population of over 30,000, U. S. Dept. of Commerce, Bureau of the Census, 1923. Table 12. This figure represents the sum of governmental cost payments for *general expenditures* and *water service* under the Fire Department, one-half of payments for *buildings* and *electric wiring* under Inspection Service, and one-half of payments for *police* and *fire alarm*, for all cities reporting.

3. Financial Statistics of Cities Having a Population of Over 30,000, U. S. Dept. of Commerce, Bureau of the Census, 1923. Table 12. This figure represents the total governmental-cost payments for conservation of health, minus the payments for hospitalization of tuberculosis and other communicable diseases, for all cities reporting.

WILLIAM ALEXANDER KING MEMORIAL DINNER

REPORTED BY WILLFORD I. KING

National Bureau of Economic Research, New York City

THE American Statistical Association and the American Public Health Association held a joint dinner meeting at the Aldine Club at Twenty-third Street and Fifth Avenue, New York City, on Friday evening, April 9, 1926. Fifty-five persons were present.

The gathering was in commemoration of the twentieth anniversary of the death of William Alexander King, the first Chief Statistician for Vital Statistics in the Permanent Bureau of the Census, which position he held from 1900 to 1906.

The meeting was ably presided over by Dr. Louis I. Harris, Commissioner of Health of New York City. The guests of honor at the dinner were Sir Arthur Newsholme, the distinguished British authority on vital statistics, and Lady Newsholme.

The first paper of the evening, read by Walter F. Willcox, Ph.D., of Cornell University, told of the services of John Shaw Billings in the development of national vital statistics, 1880 to 1900. John Shaw Billings was a working member of the American Public Health Association from the start and became its president when it was 8 years old. His main services to vital statistics were these:

1. He suggested to Mr. Hollerith the idea of mechanically tabulating census data and thus supplied the germ of the most important technical contribution to the development of modern statistics.

2. He shared with Abbott the distinction of first introducing into American practice the use of corrected death rates.

3. In connection with the census of 1880 he prepared the first significant local life tables ever put out by the federal government and thus laid a basis for measuring the increased length of life after 1880 in certain parts of the country.

4. He divided up the country and certain cities into districts or areas having similar conditions and thus opened the way to thorough studies of local health.

5. He was the first to point out the evidence of a nation-wide and rapid fall in the birth rate.

His work marks an epoch in the American development of vital statistics.

The next speaker was George H. Van Buren, of the Metropolitan Life Insurance Company of New York City. Mr. Van Buren formerly worked under the direction of William Alexan-

der King, and he therefore spoke with authority on the notable service rendered by Mr. King to the cause of furthering the development of vital statistics in the United States. The speaker regretted that, unfortunately, the contributions made by Mr. King have not been adequately recognized, and he felt that both the American Statistical Association and the American Public Health Association should be commended for giving recognition by holding this anniversary meeting. Mr. Van Buren pointed out that one of the achievements of William Alexander King, which has proved of great importance, was his origination of the standard certificate of death, now in use in practically all the registration states and cities. He was untiring in his zeal in the great work of standardizing vital statistics and in extending the registration area. He was an important coworker in drafting what is known as the "Model Law for Vital Statistics." The result of this draft was the passing of this law in many states and their consequent admission to the registration area years in advance of the time at which this could otherwise have been brought about.

Mr. King was the prime mover in getting through Congress the first important federal recognition of the value of statistics of births and deaths as essentials to the progress of medical and sanitary science in preventing and restricting disease and in devising and applying remedial agencies. He was the upbuilder of that splendid office methodology which laid the foundation for the excellent annual mortality reports published since 1900 by the Permanent Bureau of the Census.

It is safe to state that seldom, if ever, has any man made such vital contributions in any branch of science as has Mr. King to American vital statistics, while receiving so little public recognition and appreciation for his services. The lack of recognition was largely due to the fact that he did nothing ostentatiously and was inclined to reticence, and that the credit for much of his work was taken by his superiors.

However, it was due to his wonderful organizing genius, his grasp of details and power of concentration, his veritable passion for accuracy, his clear-sightedness and his tireless energy, that so much progress was made during his term of office. It was under his regime that the International Classification of Causes of Death was adopted by the Bureau of the Census.

Personally, Mr. King was a most likable man, with a keen sense of humor, and was a splendid companion to his few intimates. In his contacts with his staff he was seldom severe and was generous to a fault.

The third speaker of the evening was William H. Guilfoy, M.D., of the Department of Health of New York City. He spoke on "Cressy Livingston Wilbur and the Federal Registration Service, 1906 to 1914." He outlined briefly the life of Dr. Wilbur as follows:

He was born at Hillsdale, Michigan, in 1865, and was graduated from Hillsdale College in 1886, receiving the Master's Degree in Philosophy 4 years later. In March, 1890, Bellevue Hospital Medical College of New York conferred upon him the degree of Doctor of Medicine. In June, 1891, he married Blanche L. Mead of Hastings, Michigan. He was chief of the Division of Vital Statistics in the State of Michigan for 13 years, beginning with 1893, and incidentally found time to lecture on vital statistics in the medical department of the University of Michigan, between 1902 and 1905. In 1906 he was appointed chief of the Federal Bureau of Vital Statistics. He served as delegate of the Bureau of the Census to the International Congress on Tuberculosis at Washington in 1908, and was elected vice-president of Section VI. He held many other national and international positions in organizations related to hygiene, demography, vital statistics, and public health. Dr. Wilbur was assistant to William Alexander King in the preparation of the Model Registration Law, and it was largely due to his persistent efforts that 20 states enacted laws providing for its adoption. He was honored by the American Medical Association for the study and prevention of infant mortality, by being elected president in 1912. He also held membership in the International Statistical Institute, and was a Fellow of the Royal Statistical Society of England. When his services as Chief Statistician of the Bureau of the Census began, in 1906, only 49 per cent of the population was included in the registration area. During his 8 years of service the percentage was increased to 66.

He differed with the Director of the Census as to the procedure to be followed in gathering material for the mortality and fecundity reports, and resigned in 1914. After that, he served the New York Board of Health with distinction for several years as Director of the Bureau of Vital Statistics.

Dr. Guilfoy paid a personal tribute to Dr. Wilbur's modesty, kindly good nature, and steadfast adherence to the principle of honest fair dealing with all men.

The discussion of the evening pertained to the topic "The Future of the Federal Registration Service." William H. Davis, M.D., of the Federal Bureau of the Census, pointed out the remarkable progress that has been made in increasing the extent of the areas in which births and deaths are registered and recorded regularly. He admitted that there has been occasional backsliding, as in the case of Georgia, which was admitted to the registration area for deaths in 1922, but was dropped later because the Georgia Supreme Court decided that it was unconstitutional for counties to collect taxes for the registration of births and deaths. However, it is hoped that this setback will prove temporary, for a bill is now before the Legislature to amend the Constitution, and there is a strong prospect that the amendment will be ratified next November. The chances for favorable action in 1927 by the Legislatures of Nevada, South Dakota, and Texas are good. In several other instances, the officials are busy in an attempt to bring their states into the registration area.

The Children's Bureau is doing splendid registration promotion work. The International Health Board has proved and is proving another fairy godmother in improving registration. These officers have visited many of the states and have given material financial assistance when necessary. The American Child Health Association has generously loaned one of its agents for the campaign. The Census Bureau is placing in the post offices of at least 15 states, posters outlining the reasons for birth and death registration. Four of the Bureau's regular vital statistics field men are now working in states that need help, one each in Alabama, Georgia, Mississippi, and Texas. The best news of all, however, is that Dr. Batt, for many years the State Registrar of Pennsylvania, has retired from that position, and it has therefore been possible for the Bureau of the Census to secure his services to aid registration promotion work in the field. On account of his long experience, he is sending in most optimistic reports regarding the outlook. He has already visited Tennessee, Arkansas and Louisiana, and thinks that all of these states will be ready for admission to the area during this calendar year.

Dr. Davis closed by saying: "There are 15 states to be brought into the field before 1930. Were I asked to specify the order in which each of these states would probably enter the registration area, I would predict for 1926 the following 5: Alabama, Idaho, Louisiana, Missouri, and Tennessee; for 1927, again 5: Arizona, Arkansas, Georgia, New Mexico, and South Carolina; for 1928, 3 states: Colorado, Nevada, and South Dakota; and for 1929, the remaining 2: Oklahoma and Texas."

The discussion was closed by Louis I. Dublin, Ph.D., of New York, Chief Statistician of the Metropolitan Life Insurance Co. In his view, a serious oversight was made by the makers of the American Constitution when they failed to delegate to the federal government, control over the field of vital statistics. Of course, this oversight was what might be expected, inasmuch as the idea of registering births and deaths was scarcely thought of at the time that the Constitution was adopted. As matters stand, however, registration is entirely in the hands of state and local governments. Obviously, it is difficult to get all the 48 states to act in unison, and this explains why, in this respect, we are so far behind England, which in 1837 by a single act of Parliament established registration throughout the whole country, thus setting the pace for the civilized world.

The extension of the registration area to cover the entire Union in 1930 cannot be accomplished unless those interested in this project will carry on an active campaign in each of the states not now having complete registration. This fact having been recognized, a committee of the American Public Health Association has been formed to assist the agents of the federal government in accomplishing this end. Most of the funds for the support of this committee have been furnished by leading life insurance companies. These companies have contributed because they, more than anyone else, are interested in having complete and accurate statistics of births, sickness, and deaths. This committee is now engaged in securing the coöperation of numerous national and local organizations. In its preliminary efforts, the committee has been meeting with success, and there is good reason to believe that they may attain their goal, which is to have every state in the Union in both the birth and death registration areas before the year 1930 ends.

RECORD FORMS IN THE SYRACUSE HEALTH DEMONSTRATION*

GEORGE C. RUHLAND, M.D., AND I. F. THOMPSON, M.D., FELLOWS A.P.H.A.

Department of Health, Syracuse Health Demonstration, Syracuse, N. Y.

WITHIN the past years there has been a marked tendency toward standardization in practically every departure of public as well as private enterprise. Public health work shares in this movement. The report of the Committee on Municipal Health Department Practice, published as *Bulletin 136* by the U. S. Public Health Service, exerted a marked influence in this direction.

This tendency to establish standards in health work was still further crystallized by the Appraisal Form published by the American Public Health Association which has been adopted by health officers in many cities.

In attempting to use the Appraisal Form in the Syracuse Health Demonstration it soon became apparent, as it must anywhere, that no reliable rating of work performed and results achieved can be possible without adequate records of such work and achievement.

In conformity with the policy of the Demonstration to secure for its activities and guidance the best in current health practice, a systematic study of record forms was undertaken. The Committee on Municipal Health Department Practice also became interested in this problem and a sub-committee, of which both of the writers are members, has recently been formed to study the subject. It is hoped that out of the work of this committee, record forms may be developed which may ultimately be approved by this Association. Such record forms would not only prove helpful to the health officer in developing forms for his own use but, if produced in quantity, might also be made available to health officers in smaller communities at a reasonable cost.

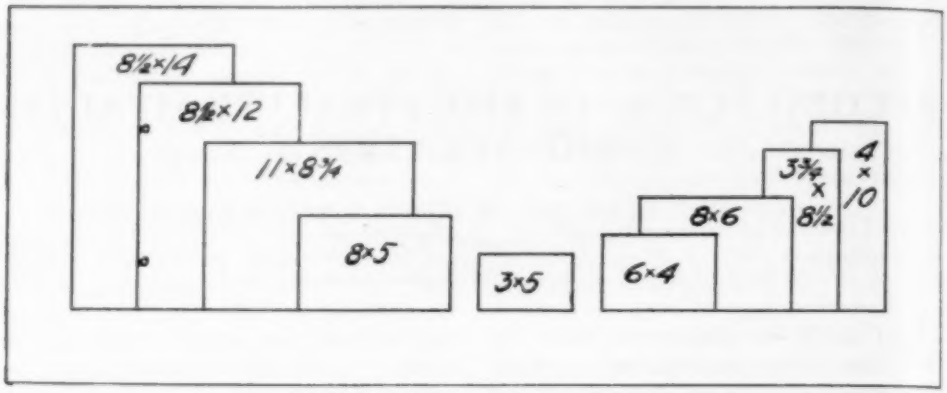
Independently of this committee's work, the record forms of 46 cities have been reviewed by us. The study of the material thus brought together has already furnished some rather interesting information. It appears, for example, that in cities of 100,000 or less, record forms find but little use, and that even in cities of 100,000 to 200,000 record forms are rather incomplete. Naturally, there are marked exceptions to this generalization.

Chronologically, the sequence in the development of record forms in use in these cities appears to have been as follows: vital statistics, sanitation, communicable diseases, tuberculosis, and child welfare. Parenthetically it may be added that the record forms for tuberculosis and child welfare are by far the best of the material studied so far.

In size the forms varied from sheets measuring 19″ x 32″ to mere stickers. Other forms were in odd shapes that would preclude filing them in standard filing cases and also mean a considerable increase in cost owing to the waste in cutting such forms from standard stock.

The weight of paper selected in many instances illustrated unnecessary and unwarranted expenditure of money, considering the temporary nature of the use

* Read before the Public Health Administration Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 21, 1925.



SOME OF THE VARIOUS SIZES USED

of the record form. This was also true of some permanent records. Even the choice of the color of paper and ink furnished suggestions for important consideration. A purple card printed in blue ink which we found among the forms submitted well illustrated the type of illegible record form.

Multiplicity of record forms was yet another feature that attracted attention. one department furnished at least 47 forms for the activities of a single bureau. In addition thereto, many of these records in this particular bureau required recording by code.

Lack of uniformity in the inclusion of subject matter and, of course, the greatest variation in arrangement were other outstanding features.

The study of these record forms has proved most interesting and instructive and has convinced us that a valuable contribution can be made to health work by devising a minimum of necessary record forms that will follow standard sizes for filing purposes and, above all, will bring together comparable data which will guide health activities and group the data in such a way that the facts can readily be taken from them for statistical purposes.

Following are presented only some general considerations and conclusions based on our work thus far. No attempt is made to offer any "ideal" record forms though quite a number of forms have been developed which are being tried out in practice at the present time.

Before taking up the matter of record forms in further detail, it might be well to recall the general purpose of records. Records are memoranda of work done or to be done. They are the means which enable the work to proceed smoothly despite changing conditions or personnel. They are a vital necessity. Records are not a matter of red tape, but the backbone and mainstay of organization and administrative efficiency. They make it possible to avoid duplication of effort; are the means to test the success of effort; and are the guide in formulating further plans.

Records are a check on work performed—showing whether effort applied brings proper return—and whether workers are properly performing their duties. They are the instrument by means of which the statistician is able to gauge the tendencies and fluctuations in health and morbidity of the community. Yet, records must not become an end in themselves; they must never be exalted above results. Rightly used, they will prove the most powerful factor in developing, guiding and promoting health work.

Considering merely the mechanics in record forms, two major points present themselves:

1. The form of the record itself
2. The arrangement of the subject matter

Only the former of these two points will be dealt with in this paper.

Under the term "form" are included such items as size, weight, quality, shape and color of paper, as well as the type and ink used.

Keeping records in books, which was formerly the custom, is giving way to the more modern system of record cards. Except for the keeping of vital statistics in the form of a loose-leaf ledger, it is our judgment that practically all health records are better kept on cards. The readiness with which records in this form may be handled for the addition of new data or for study or comparison, and the absence of bulky and unwieldy tomes are only some of the obvious advantages of using this modern business method.

Quite early in this study, special attention was given to the visible record systems. Working with the companies specializing in such record forms, we finally arrived at the conclusion that, while these systems offer many advantages, the rather high initial cost and the fact that the systems in their present forms would represent extravagance for short-timed records, make them impractical for all activities of the average health department. Where records cover a period of years, such as in sanitation, food inspection or tuberculosis, these record systems may be effectively used.

It is essential that records may be in such form as to be readily handled. This means that they should not be too large in size, nor awkward in shape. From our studies, it would appear that most of the essentials in health records can be adequately accommodated on forms of the following dimensions: 3″ x 5″, 5″ x 8″, and 8½″ x 11″. These sizes are standard and can be readily accommodated in standard filing cases. The first two are adequate for office or field records, and the third size is especially fitted for summary reports and clinical records.

Record forms of these sizes are most economical, since there is little waste in cutting. Generally speaking, paper cost is figured on a square inch basis. A small form is cheaper than a large one. Further, the cost of printing is reduced in the small form by less composition, and by allowing a double set-up if the run is large; also, in that a smaller press can be used, enabling the job to be handled at greater speed and at a smaller investment.

The use of colored cards has come into general use especially in dealing with communicable diseases, and also in food and sanitation records. It is a convenience of considerable value. Only the lighter tints should be used, however; darker colors cause a real difficulty in making and reading the records.

In selecting stock for record forms, consideration should be given to whether the record is intended for temporary, semi-permanent or permanent use; likewise, to whether the form requires much handling, and whether the record is to be made by pen, pencil, or to be used with carbons. In dealing with the mechanics of record forms, the health officer will find it to his advantage to take council with a good printer.

For temporary or semi-permanent records a 16 or 20 lb. bond stock is fully adequate; for permanent record cards a 110 index card stock or not more than 24 lb. bond seems to be best. For the records devised thus far for the Syracuse Health Demonstration, paper and card stock of these weights has been used. The type known as the Caslon, Bold Face, 8 point, with caps for titles or emphasis, has been used with both black and a dark blue ink. Both give a neat, clean record which is easily read and worked upon, the lines being so spaced that the items may be entered by typewriter.

The arrangement or composition undoubtedly represents a most important factor in record forms. Not only does it materially affect the cost of printing, but it largely determines the value of the record. Since it involves a consideration

of detail of subject matter which is not to be dealt with in this paper, only a few general remarks will be added on this point.

A considerable saving in cost and time can be effected by combining the essentials of several record forms now in use by many departments into one form, either by rearrangement of the material or by elimination of irrelevant data.

Obviously, the matter of cost is a fundamental and important factor in considering record forms. We have purposely avoided quoting figures under this point for the reason that manifestly the item of cost will fluctuate greatly from time to time even in the same locality. It is clear, however, from the forms studied that considerable saving could have been effected, had the subject matter on the record forms been more advantageously condensed or arranged, and had more thought been given to a proper selection of stock. The printing of record forms, since it involves rather an elaborate set-up, is always costly. The greatest care should be taken, therefore, that the form selected has been reviewed to incorporate only the essentials for the service. It is also advisable to secure competitive bids. We have found in bids on record forms developed for the Demonstration that quotations varied fully 100 per cent.

Records should be so arranged that data can be readily summarized from them. This can frequently be accomplished by subdividing the record form by heavier or colored lines which will group data and will assist the eye across the page. Record forms should be devised with the assistance of a statistician, for it is the statistician who is obliged to compile facts from the records.

Summarizing our conclusions gained from studying the record forms submitted from various health departments, we wish to submit the following:

If an appraisal of health department activities is desirable—and we firmly believe that it is—then such an appraisal to be of value must be based upon records that are reliable and contain more nearly uniform and comparable data.

Well devised record forms will go far in developing, guiding, and securing competent service. Even the best of workers will flounder and waste time—not to speak of the irritation which misguided inquiry occasions the public—unless activities are definitely outlined and the information wanted is clearly set forth.

Proper record forms are of the greatest aid in maintaining and advancing efficiency and discipline wherever large numbers of employes are engaged. Adequate and uniform record forms are a necessity in order to show work performed and gains accomplished.

Public health will grow and prosper only in proportion as the health officer is able to furnish proof of work performed. This means records.

THE ADMINISTRATIVE CONTROL OF MEASLES

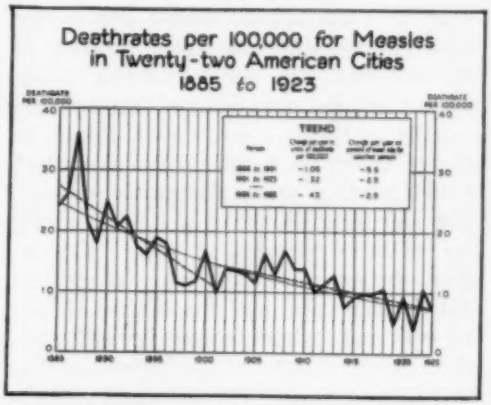
EDWARD S. GODFREY, Jr., M.D., Fellow A.P.H.A.
Director Division of Communicable Diseases, State Department of Health, Albany, N. Y.

IN EPIDEMICS of measles and whooping cough, there is usually lacking that official alertness and public interest which characterize epidemics of smallpox, diphtheria and scarlet fever. When the former prevail the measures follow a routine and are performed as duties demanded by law and custom and with little hope of results. Failure on the part of the public to appreciate the importance of these diseases, and failure of our administrative methods to meet the special difficulties imposed by the peculiarities of the diseases themselves, apparently explain this attitude.

The purpose of this paper is to outline a method of procedure designed to reduce the mortality of measles rather than its morbidity. Efforts to reduce the latter have been totally lacking in measurable results, since it is difficult to see how the disease could ever have been more prevalent than it is to-day.

The decline in the measles death rate is the result of a decline in the case fatality rate and this is probably a by-product of improved living conditions and of the general health movement. At any rate the measles death rate fell a great deal further in our large cities between 1885 and 1900 than it has fallen since, though during the former period isolation, placarding and exclusion from school were far more imperfect than to-day (Figure 1). It is fair to say that our activities have been of value principally in impressing the laity with the fact that measles is a disease potentially dangerous and therefore requires good medical and nursing care. It is true that in some instances measles epidemics have been prevented or, to speak more correctly, have been postponed a year or two but not on a scale sufficient to noticeably affect the death rate. It may be doubted on the other hand if it be desirable to increase the intervals between epidemics to as long as 20 or 25 years even if that were possible.

FIGURE I



From *Statistical Bulletin*, Metropolitan Life Insurance Co.

CONTROL DURING FIRST THREE YEARS

It seems that we have a choice of three courses in dealing with measles. The first is to do nothing and trust to the attrition of general health measures, improving living conditions and general education of the public to reduce the mortality. This is not to be recommended, since it creates the impression in the mind of the laity that the disease is unimportant. They would deduce from the do-nothing attitude of the health department that there was nothing for them to do, whereas, there is something that they, or at least those having children, can do and with

some promise of results. Furthermore, abandonment of reporting, imperfect though it is, would leave us in the dark regarding many phases of the epidemiology of the disease since mortality figures alone may be quite misleading.

The second is to continue as at present in an attempt to prevent *all* cases of measles rather than any *particular* cases of measles. It is believed that this purpose should be abandoned until we shall have an active immunizing agent as certain as vaccination and extremely simple of administration.

The wisdom of preventing or deferring epidemics for a long period is very doubtful. We should remember the serious inconvenience and the considerable mortality caused by measles during the World War in cantonments where the troops were largely from the rural sections of the country. Age *per se* confers no immunity against measles and the appearance of so highly contagious a disease in a city made up largely of susceptibles would produce more disruption of business and social life than was seen during the influenza outbreak in 1918. The inability to meet the demands for medical and nursing care, and the efforts of sick mothers and fathers to care for sick children surely would induce higher fatality rates at every age. The increased percentage of adult cases with their higher fatality rate would further swell the mortality, and the ultimate effects of our efforts at prevention would perhaps be to produce in a brief period more deaths than would otherwise have been spread over a series of years.

How futile our efforts have been in reducing the morbidity rate of measles is shown by disease censuses taken in various urban communities which indicate that about 90 per cent of those reaching adult life have had measles. As for the rural sections, while the percentage of adults who have been attacked is lower than in the cities and villages, the death rate is, in New York State at least, higher in the unincorporated towns (or townships) than it is in the small villages. Although less adequate medical and nursing care probably account for most of this higher rate, it is due in part to the larger percentage of adult cases.

A third course here proposed is by no means original except in certain details of practice and neither attempts the impossible nor gives up the battle in despair. It is based on the fact that approximately 70 per cent of all measles *deaths* occur in children under 3 years of age, whereas the population at this age amounts to but 6 per cent of the total. The *cases* at this age in New York State amount to but 12 to 15 per cent of the cases at all ages. It is proposed that we largely abandon our efforts to prevent *all* cases of measles and concentrate our efforts on preventing as many cases as possible in children under 3 years of age.

MORE DEATHS IN LARGE COMMUNITIES

A study of 199,699 cases and 16,006 deaths from diphtheria, and 595,234 cases and 8,036 deaths from measles, New York State 1915–1924, shows that diphtheria and measles both cause more deaths proportionately to population in large communities than in small ones. In diphtheria this is principally due to the fact that the disease is more prevalent in large places than in small ones. Measles, however, making due allowance for better reporting in small communities, seems to be at least equally prevalent except in unincorporated territory. While the case fatality rate does influence the mortality rate of diphtheria to some extent, it is not the determining factor that it is in measles. In other words, measles kills more in large cities than in small villages because it is more fatal, not because more are attacked.

Congestion not only makes complications more likely but increases the probability of an attack at an early age. Our figures show that 18 per cent of the measles cases and 83 per cent of the deaths occurring in places of from 50,000 to 200,000 population were in children

under 3 years of age as compared with 11 per cent of the cases and 61 per cent of the deaths in villages of less than 2,500.

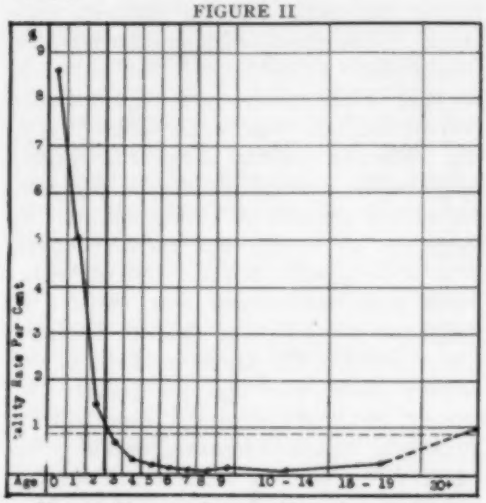
A comparison of monthly fatality rates indicates no season that is distinctly favorable. The rather common belief that measles is less apt to be fatal in the summer finds no statistical support. The monthly fatality rates are much higher in July, August and September than at any other time. Less complete reporting, lag and a seasonal variation in the age distribution fail to adequately explain these higher rates, and serve as a warning against attempting to advance or retard measles epidemics to the summer season. In fact, the one outstanding feature of the study of measles statistics is the preponderance of deaths under 3 years of age, the small percentage of cases under that age and the high fatality rate for this period as compared with all other ages (see Figure II).

DEATHS DECREASE ABOVE 3 YEAR AGE GROUP

In the 10 years from 1915 to 1924 inclusive, there were 35,930 cases of measles reported among children under 3 years of age in places in New York State of less than 200,000 population. Of these cases, 1,441 died—a fatality rate of 4 per cent. Had all of these cases been postponed until they were between 5 and 14, with the fatality rate common to that age period, there would have been but 54 deaths, a saving of 1,387 lives in this group of municipalities. Had these cases been treated early and given adequate care, or even had the hygiene of the sick room been given early attention, we have every reason for believing that these deaths could have been materially decreased.

Other persons die besides those under 3 and it seems possible, without going too far afield, to pick out these bad risks and try to protect them. Measles, while it attacks all without distinction, seems to *kill* with discrimination. First of all it discriminates by killing a large percentage of those under 3 and it kills these without any very marked respect for physical condition, the economic status of the family, its intelligence or any other factor—not that these are of no effect but that the adverse factor of age so far overshadows them that they are of secondary importance. Any child under 3, delicate or robust, rich or poor, is likely to have a hard time with measles and may die as a result.

FIGURE II



MEASLES FATALITY RATE AT EACH AGE, 1915–24
Total for New York State exclusive of places over 200,000. The broken horizontal line shows the average at all ages. Note the very rapid decline during the first 3 years.

On the other hand, as shown by replies to queries which have been sent out during the past 3 years on every death from measles in New York State, these other factors assume greater importance as the critical age period is passed. They indicate that children over 3 seldom die of measles unless they were in poor physical condition, have been given inadequate care until the fatal complication arose, or have come from overcrowded homes. Such factors as parental intelligence and economic condition are more prominent in the picture and point to another group that offers reasonable reward for effort expended, not only in attempting prevention, but in providing adequate care if they are attacked.

Granting that it is desirable to prevent or ameliorate measles among children

under 3 years of age and among certain older children, it is proposed that this be accomplished by the intensive education of a particular part of the public—the parents of small children.

EDUCATION

Measles epidemics can be predicted with a fair degree of certainty by studying the past record of the community and noting the usual interval between outbreaks. The proposed plan contemplates preparedness in advance of the outbreak so that while things are done expeditiously, they are done in an orderly fashion. The one essential is never to forget, or allow the medical profession, the public, or the parents of young children in particular to forget, *that measles under 3 is a dangerous disease*. Secondarily, make them understand that measles is dangerous to sickly and delicate children, that under 3 is the danger period and the further under that age, the greater the danger, and that any person, especially an adult who contracts measles, should go to bed and receive good medical and nursing care and have a reasonable period for convalescence.

It is believed that this kind of education will take. Our great trouble at present is that we do not discriminate and neither does the public. We tell them that *measles* is dangerous and they think we are trying to frighten them into employing a doctor. *We* base our judgment on mortality statistics showing that twice as many die annually from measles as die from typhoid or scarlet fever. We do not discriminate as to age. *They* base their judgment on their everyday observation of measles, which shows them that hundreds, yes even thousands of school children, may have the disease and not one of them die. Our New York statistics show that there is only 1 death from every 667 reported cases between 5 and 14 years of age. On the basis of the facts as the public sees them the public is right. When we begin to discriminate, so will the public. They will recall that they have not known of very many cases in children under 3 and that of those they can recall it went hard with them. They will then begin to believe us and heed our advice.

How will we reach this particular fraction of the public? First, there is the newspaper, our old friend that is usually asked to publish more or less in full the pamphlet issued by the state or local department of health, and they do it although it has no news value unless linked with some current event. The editor cannot be asked to reprint a pamphlet every week but unless the advice is kept before the public it will soon be forgotten.

The thing to do is to make news out of the epidemic and intersperse the advice with the news. That helps the editor and helps the health officer. But one must never forget to say how many children under 3 did or did not contract measles yesterday, during the week, or since the epidemic started. Positively or negatively, it makes little difference which—3 years of age must be kept before the public as the dangerous age. If there is a death the most should be made of it. One should tell why it happened and how it could have been avoided.

It should be remembered that the epidemic will last from 2 to 6 months, or even longer, depending on the size of the community, the percentage of susceptibles, etc.—so it must not be overworked. After the first 2 or 3 weeks, once a week is quite often enough to report progress and remind the public that measles is a dangerous disease in children under 3 and in those in poor physical condition.

So much for the general public. The medical men should be advised in the beginning of the purpose and the plan and asked to lend their support by reporting cases promptly, verifying to their patients the statements to the public and giving especial attention to cases, contacts and potential contacts under 3 years of age. They should be informed, if it be true, that the state department of health usually has available a small supply of convales-

cent measles serum which is a fairly reliable temporary prophylactic, provided that contact is not continued and that the serum is given within 5 days after first exposure; that the state has difficulty in maintaining a supply of this serum and that if they have any adult or adolescent cases they should endeavor to persuade them to go to the nearest collecting station and allow themselves to be bled of a pint of blood for which they will be compensated. They should be warned that the supply of serum is ordinarily so small that it should only be used under extraordinary conditions and that ordinarily the blood of one of the parents who has previously had measles should be used; that this is not a difficult procedure and is being used more and more as the difficulties of obtaining convalescent blood in sufficient quantities become apparent; that with a dosage seven or eight times that of convalescent serum, the results are said to be equally good.

RECORDING ALL CHILDREN UNDER 3 YEARS

The parents particularly to be warned and instructed are to be discovered through the birth certificates, affording a list perhaps 90 per cent complete. A card is made out for each child born during the 3 years preceding the expected epidemic giving the name of the child, the date of birth, the name and address of the father or mother, the birthplace of the mother, the number of children of this mother now living and the economic status of the family, the intelligence of the parents and evidence of overcrowding. With the exception of the last three items all of the above information can be obtained from the birth certificate and can be entered in less than two minutes. The reverse side of the card should provide space for entering the names and ages of other members of the family and a statement of whether or not they have ever had measles, and the names and addresses of any relatives or friends who can care for the older children during their attack or where the baby may be taken.

These cards should be made out in advance of the epidemic. Where the next epidemic is not expected for 3 years, cards made out from day to day as the birth certificates are filed will provide when the epidemic comes the basic data for carrying out the procedures hereafter described. It is proposed that where a public health nurse delivers baby booklets or copies of birth certificates in person that she obtain at this visit the required information. When the epidemic is expected sooner, the feasibility of gathering the data on earlier births should be considered. From time to time the cards for children who have celebrated their 3rd birthdays or who have died or had measles should be removed and the index thus kept up to date.

These cards should be classified into two groups for filing. The one would carry the names of those whose economic condition and general intelligence is such that they probably will call an intelligent, reporting, immunizing doctor as soon as the first case of measles occurs in the family or as soon as they know one of their susceptible children has been exposed. All the others would go in another file. These are the special risks and since they will perhaps constitute a large majority of the total it may be considered advisable to subdivide them according to an estimate of the danger. If these cards are filed by blocks or districts, it will facilitate their later use.

When the epidemic appears, a letter is sent to the families in both sets of files, calling attention to the fact that measles is exceptionally dangerous to children under 3 years of age and that according to the birth records there is such a child in their family. Possibly the pamphlet of the state or city health department will be enclosed or the letter itself will describe the initial symptoms. It must be made plain that protection is in the hands of the parents, and the individual citizens of the community—that the most the health officer can do is to give advice through articles in the newspapers and as far as

possible through personal visits by the public health nurse. This letter is for the purpose of interesting *these particular parents* in measles, thus inducing them to read the news items appearing from time to time and to heed the instructions given for the protection of their particular children.

INSTRUCTIONS

What are these instructions? That the outbreak will probably last from 2 to 6 months, depending on the season when it begins and on the size of the community; that during this period their children under 3 years of age should be kept to themselves as much as possible, should not be taken to public gatherings or transported in public conveyances, and that they should play only with the other children of the family or those known to have already had measles. Among the well-to-do, these things are not difficult. The most likely source of infection among this class is from an older child contracting the disease and bringing it home. Consequently parents having older non-immune children should be instructed to watch most carefully for the initial symptoms and if any appear, to isolate the baby immediately and call their doctor. Where an older child is known to have been exposed, the baby should be kept away from him for at least 18 days. The older child may be sent away where there are no susceptible children, toward the end of the incubation period or upon the *very first* appearance of symptoms.

With families in less favorable circumstances, the matter is one of much more difficulty. In the first place children under 3, living in tenements, or other more or less congested quarters, are more liable to exposure from children of the neighborhood. They cannot be comfortably isolated and the mother cannot select carefully the children who come in contact with the special risks of the family. Cases are more apt to be concealed; a physician is likely to be called in late, if at all; and by reason of the poor living conditions the likelihood of complications is vastly increased. Here is where special, individual, personal instruction must be given by the nurse or by the health officer. Actual medical and nursing care must be provided for the poor and ways and means must be devised for overcoming obstacles. The problem among the foreign born, the tenement dwellers, the ignorant, is admittedly difficult but not unsolvable.

Primarily we must strive to bring about a change of attitude of these people to the health department and this requires in most instances a change in the attitude of the health department toward them. Instead of exercising its authority on those families that are reported, authority should be reserved, except in rare instances, for those families and those doctors who do *not* report. The only restrictions that are of any value in the prevention of measles are those imposed by a suspicious mother or a suspicious doctor before a positive diagnosis can be made. The job of the health department is to educate parents in the initial symptoms, to get all of the cases reported, to visit each of them to find out who the contacts are, to try to have the young and delicate contacts immunized and to see that every case, regardless of age or condition, gets good care. It must either maintain a supply of convalescent serum or provide a physician to administer parental blood when called upon to do so.

The occurrence of a case in such a neighborhood will call for considerable personal supervision by the public health nurse to discover contacts and early cases. If among the contacts there are children under 3 years of age, or older susceptibles who are in poor physical condition, an effort should be made to have them passively immunized with convalescent serum or parental blood. The supply of convalescent serum is, and probably always will be, so limited that parental blood should constitute the mainstay in efforts to confer passive immunity. Neither is certain in its protection, especially when the patient is subject to repeated intimate

exposure but they appear capable of so modifying the attack of measles that secondary infections are not likely to ensue.

SUMMARY

I have sought to show that we are not preventing measles by the methods now in vogue; that even if it were possible, it would be a policy of doubtful wisdom to postpone epidemics too long in any city, state or even nation while elsewhere the disease remained as prevalent as it is to-day; that though we cannot prevent measles, we can to a certain extent control it by an intensive course of training of a particular fraction of the public and that this training should be directed toward the reduction of mortality, through postponing the attack of measles until after the child has reached 3 years of age.

It is not pretended that the method advocated calls for less labor than those in common use. Indeed for certain periods of the epidemic it may be necessary to turn practically the entire force of the health department into the effort, to employ extra nurses and physicians and to mobilize, instruct and direct unofficial welfare organizations just as one may some day have to do in an epidemic of influenza or in some other emergency. It is a case of utilizing a large number of people for a short period of time, giving them an intensive training and assigning them to their duties in accordance with one's estimate of their capabilities. The method has the merit of providing a reasonably attainable purpose—that purpose being *to prevent deaths* by keeping at the lowest possible minimum the number of cases in children under 3 years of age and in older children in delicate health, and by seeing that no child suffers from ignorant neglect.

ANAEROBES IN SEWAGE*

FRANK E. GREER, M.S.

Department of Hygiene and Bacteriology, University of Chicago, Chicago, Ill.

UNTIL RECENTLY no method has been available for making a direct count of the number of anaerobic bacteria in water and sewage. The medium devised by Wilson and Blair offers a possibility. They used a sulphite-glucose-iron agar in which many of the anaerobes produce black colonies. Such colonies are produced by *Cl. botulinum A, Cl. botulinum B, Cl. fallax, Cl. chauvei, Cl. sporogenes, Cl. tertium* and *Cl. welchii. Cl. tetani* and *Cl. histolyticum* give gray colonies and *Cl. edamatiens* does not show a definite reaction. Aerobes, with the methods used, do not form black colonies on this medium.

We used a slight modification of the method used by Wilson and Blair: Three per cent nutrient glucose agar was sterilized in flasks in 100 c.c. quantities. The melted agar was cooled to 60° C. Ten c.c. of a sterile freshly prepared 20 per cent solution of anhydrous sodium sulphite in distilled water and 1 c.c. of an 8 per cent ferric chloride solution were added. To this was added 20 c.c. of a heated (80° C. for 20 minutes) dilution of sewage, sludge or effluent and the contents of the flask thoroughly mixed. One-fourth of the contents was then poured into each of two large Petri dishes. After the agar in the Petri dishes had hardened a second layer of medium was poured as before. When this layer had hardened, a

*This is the third of a series of articles. See J.I.E.H., Oct., 1925, and May, 1926.

second flask of medium was prepared with the addition of 40 c.c. of sterile water in place of the sewage and a third layer poured into each Petri dish.

The plates were incubated at 37° C. and the number of black colonies counted after 24 hours. During some of the work plates were also incubated at 50° C. to detect possible thermophilic anaerobes.

The samples for this study were collected at the Calumet Sewage Treatment Plant, as follows: foul sewage (12 samples), Imhoff tank sludge (11 samples), Imhoff effluents (9 samples), activated sludge from the aeration tank (17 samples), sprinkling filter bed (7 samples), sprinkling filter effluent (7 samples), and pressed and heated sludge (9 samples).

A number of colonies were picked from the plates for identification. Of 160 colonies from the 37° C. plates 153 colonies were identified as *Cl. welchii*, and the remainder as *Cl. sporogenes*. Of 78 colonies from the 50° C. plates 72 proved to be *Cl. welchii*, 5 were *Cl. sporogenes* and 1 was not identified. If obligate thermophilic anaerobes were present, either they did not develop on the medium used or they were present in much smaller numbers than either *Cl. welchii* or *Cl. sporogenes*.

The most important ingredient of this medium appears to be sodium sulphite. In the absence of this salt no colonies developed. The ferric chloride serves as an indicator. In its absence the colonies appear indistinct in outline and of faint gray color.

There was a wide variation in the numbers of organisms found in the individual

ANAEROBES FOUND IN SAMPLES

Foul Sewage		
37° C.	60 to 4,500 per g.	Median 170 per g.
50° C.	60 to 300 per g.	Median 160 per g.
Imhoff Sludge—wet		
37° C.	15,000 to 7,500,000 per g.	Median 180,000 per g.
50° C.	2,000 to 550,000 per g.	Median 175,000 per g.
Imhoff Effluents		
37° C.	5 to 6,000 per g.	Median 160 per g.
50° C.	1 in 20 g. to 4,000 per g.	Median 80 per g.
Activated Sludge, Aeration Tank		
37° C.	300 to 3,500,000 per g.	Median 160,000 per g.
50° C.	300 to 350,000 per g.	Median 10,000 per g.
Sprinkling Filter Bed		
37° C.	14,000 to 1,300,000 per g.	Median 90,000 per g.
50° C.	9,000 to 850,000 per g.	Median 100,000 per g.
Sprinkling Filter Effluent		
37° C.	7 to 110 per g.	Median 25 per g.
50° C.	1 to 70 per g.	Median 4 per g.
Heated and Pressed Sludge		
37° C.	3,500 to millions per g.	Median 50,000 per g.
50° C.	2,600 to millions per g.	Median 11,000 per g.

samples from each source examined. This was true for both 37° C. and 50° C. counts. The comparative counts at 37° C. and at 50° C. were irregular but corresponded in many instances.

As in previous work the number of anaerobes was always many times greater in the sludges than in the foul sewage or in the effluents. They were numerous on the stones of the filter bed and many survived the high temperatures of the drying ovens. The low counts obtained on several occasions in a set of samples may have been due to the high acidity (pH=4.7) encountered at the time these tests were made.

BIBLIOGRAPHY

1. Wilson and Blair. *J. Path. & Bact.*, 37:119, 1924.
2. Damon and Feirer. *J. Bact.*, 10:37, 1925.
3. Veillon. *Ann. de l'Inst. Pasteur*, 36:422, 1922.

IMMEDIATE OPPORTUNITIES IN CHILD HEALTH CONSERVATION*

DONALD B. ARMSTRONG, M.D., Sc.D., Fellow A.P.H.A.
Assistant Secretary, Metropolitan Life Insurance Company, New York City

WHILE there was never a time when there were so many children in the world, yet never in the history of mankind were there relatively so few in proportion to the population. This is, of course, a reflection of the radical change that has taken place in the last few decades in the average duration or expectancy of life. Not everyone realizes how great has been this increase in life expectancy. The first life table on record for any communities on this continent, was constructed by Dr. Edward Wigglesworth for certain cities and towns in Massachusetts and New Hampshire for the year 1789. From this table we learn that the expectancy of life at birth at that time was 28 years. At the present time, for the registration area of the United States, our expectancy at birth is 58 years. Incidentally, we now believe that the way is clear, with the application of existing hygienic knowledge, for the addition of 10 to 20 years more to this average life expectancy.

The effect of all this on infant and child mortality is cumulative. We hear a great deal in social science and in medicine about vicious circles; but here we have a benign circle. Saving the lives of infants inevitably pushes large groups of children into the older age groups, and concomitantly, decreases child mortality. This increasing volume of healthy, effective adults, living for longer periods than ever before, means in turn, increased productiveness, enhanced wealth, more time to develop individual and community intelligence, with a resultant accumulation and application of greater resources to the saving of still more lives among the relatively fewer children to be found in the younger age groups.

This means that opportunities for child life conservation are greater and easier to follow up. It is true, however, that in making the first big dent in the problem of child mortality, the simpler factors have been attacked first; that is, the control of diarrheal disease, digestive disorders, etc. Relatively difficult, in spite of our increased general knowledge and resources, are the factors of mortality in the congenital group, incidental to hereditary or prenatal influences, accidents of labor and deformities. To a less degree perhaps, but nevertheless relatively difficult, is the group of respiratory affections. These are of two main types: those that have a direct and initial incidence as a respiratory disease; and those that are secondary and constitute sequelae to acute infections, especially of the readily communicable type, where efforts at control, through an indirect attack, are the more promising.

It is in this field of acute contagious diseases that certain of the most immediate opportunities lie. In public health in general, and indeed in child health work, we have witnessed a metamorphosis through several types of organized community effort. First there was the application of shotgun methods of the sanitary policemen concerned with general environmental hazards. With the work of Pasteur and others came a more accurate and specific attack upon disease, based on

*Delivered before Schuylkill County (Pa.) Child Helping Conference, Saturday, April 10, 1926.

the discoveries of bacteriology. We witnessed the development of sanitary science and specific disease control, beginning with general epidemiology and disease suppression through sanitation, growing later into a specific science of preventive immunology. This, of course, has led up to the personal hygiene and public health education of to-day, first disease suppressive in character as in its earlier attacks upon tuberculosis and infant mortality, and now more largely health creative via the health examination movement and the art of health promotive habits of living. No phase of this development has been exhausted as to its ultimate possibility in life saving. This is perhaps peculiarly true of immunological activities. Certain instances of partial development and application with some indication of potential accomplishments in this field may perhaps with advantage be cited.

SMALLPOX

We should never forget that smallpox was originally a disease of childhood. Until recently it was one of the principal scourges of mankind. In New York City in 1804 there were 169 deaths from this disease, or a rate of 225 per 100,000; in 1824, 394 deaths, or 257 per 100,000. As late as 1853 there were 656 deaths, or 112 per 100,000. Most of these deaths were among young people. In certain sections of this country, where vaccination is neglected, there is at present a distinct tendency for this disease to attack younger age groups. It has also within recent years manifested some of its original virulency, as well as an increased prevalence. In 1924, for instance, we had in this country the largest number of cases of any country in the world, except British India, but not excepting Russia. The importance of vaccination cannot be emphasized too strongly. The time for the initial vaccination is in infancy, and no amount of spectacular health organization and sensational general health educational efforts can compensate for a neglect of this fundamental procedure in our health program.

DIPHTHERIA

This is a disease that in a practical way we know all about—its cause; its spread from the sick to the well; methods of diagnosis through throat cultures; how the prompt and adequate use of antitoxin will save those already ill; and how the universal use of toxin-antitoxin will protect the majority from ever having diphtheria. But we do not know how to get universal action on the part of parents who have young children.

Certainly everyone must be familiar with the remarkable accomplishments of the medical profession and health authorities through the use of antitoxin and toxin-antitoxin. In the United States registration area, in 1900, the death rate from diphtheria was 43.3 per 100,000; in 1923 it was 12.1. In New York City, since 1920, 300,000 children have been immunized, with a decline in the death rate from 18 to 11 per 100,000, and with a falling off in cases from 14,000 to 9,000 a year. In Syracuse, N. Y., following intensive diphtheria immunization campaigns, the death rate has dropped from 45.6 per 100,000 in 1921 to 2.6 in 1925; for the same years in Detroit, Mich., the contrasting rates are 35.5 and 9.7; in New Haven, Conn., 14.4 and 1.7, with a decrease in cases of over 90 per cent; in 1921 San Joaquin County, Calif., had a diphtheria death rate of 51 per 100,000, whereas in 1925 there was but 1 death from the disease; in 1921, Auburn, N. Y., had a death rate of 38.4 per 100,000, while in 1925 there were no deaths from diphtheria.

TOXIN-ANTITOXIN

Obstacles in carrying out this work on a universal scale included, first, a strong and growing anti-vaccination movement directing its fire against diphtheria immunization. Conspicuous emphasis is given to the few accidents which occur in isolated places, as a result of immuniza-

tion, while no mention is made of the fact that in New York City, for instance, over a million injections of toxin-antitoxin have been given without serious effects of any kind.

Another practical difficulty is the development of adequate machinery in each community for the promotion of the program. To an increasing extent, toxin-antitoxin is being supplied to physicians without charge by state and local health departments. Such ought universally to be the case. The finding of medical personnel is not so difficult as it was several years ago, as doctors have become more familiar with the procedure. Among school children, where the groups can be handled collectively, the work goes forward apace. It is more important, however, to reach the preschool child, for it is in this age group that the diphtheria hazard is greatest. The immunization of preschool children is being carried out in special clinics established for this purpose by official or voluntary health agencies, in connection with school medical facilities and by private physicians.

Considerable impetus has been given nationally to the diphtheria campaign by the 5 year campaign in New York State, with the slogan, "No diphtheria in New York State in 1930." Concentration will be upon the preschool child. Obviously if during the next 5 years in New York State it is possible to immunize the great mass of children under 5 as they come along, practically all children in the first few school grades, and up to the 10th year of age, will have been protected. This campaign is being carried out by the State Department of Health, the State Department of Education, the State Medical Society, the State Charities Aid Association, and the Metropolitan Life Insurance Company.

THE SCHICK TEST

Another practical question that arises with increasing frequency in connection with diphtheria is the relative importance or necessity of the Schick test. Among health officers generally, there is a growing conviction that the preliminary Schick test, at least, is by no means an aid in the procedure from an administrative point of view, but is in fact a serious stumbling block. Parents do not particularly enthuse over it, and ordinarily it involves an additional visit to the clinic or the doctor, unless the first toxin-antitoxin injection is administered intracutaneously, and read subsequently as a Schick test, as proposed by Park. This procedure, however, requires some technical facility, is unknown to the great majority of physicians, and presumably will not become common practice for a long time. It is common experience that if the preliminary Schick test is eliminated, the total number protected decidedly overbalances this factor. Even with reference to re-Schicking after immunization, it seems possible that for children immunized at an early age, one or two supplementary injections of toxin-antitoxin at a subsequent period may be a more practicable plan.

TOXOID

In Canada there is being used as a substitute for toxin-antitoxin a toxoid in which the toxin is attenuated with formalin rather than antitoxin. This is becoming increasingly popular in Canadian communities and is being carefully studied in this country. It presents some advantages, giving less severe reactions in very young children but greater reactions in older children and adults. It seems possible that within a period of 2 or 3 years, the toxoid may supplant toxin-antitoxin in this country as well. In Canada many health officers are advocating the use of toxoid in two doses rather than three. This, however, is experimental, and there is no real difference chemically or biologically between toxoid and toxin-antitoxin in this regard. It is American opinion that three doses of toxoid would offer greater assurance of protection in the same way and to the same degree that three doses of toxin-antitoxin are superior to two.

SCARLET FEVER

This is a disease still serious as a cause of illness and death, and one that must be controlled by specific measures, measures materially augmented in the last few years.

We know that the Dick test, with the use of the scarlet fever toxin is an entirely harmless procedure, and is an accurate guide to susceptibility. There is no reason why all children should not be given the Dick test to ascertain whether or not they are susceptible to this disease. Several procedures have been successfully developed for the immunization of children against scarlet fever. Blood serum from convalescent scarlet fever patients has been used for this purpose. The scarlet fever antitoxin has been similarly used also to produce a passive immunity of short duration. Its injection is frequently followed by the development of a serum rash. For active immunization there is being used to an increasing extent the scarlet fever toxin, usually injected in three or four doses at weekly intervals. This is assumed to complete an immunity within 2 or 3 weeks in contrast to diphtheria toxin-antitoxin, which takes from 2 to 3 months to develop protection. The duration of the immunity, instead of lasting for a number of years, as is the case with diphtheria, only lasts for a year, or a year and a half. Because of this possibly short duration of the immunity, it is still generally assumed that it is hardly worth while extensively and universally to advocate the immunization of all children against scarlet fever. On the other hand, it is certainly worth while to immunize with scarlet fever toxin children exposed or apt to be exposed to the disease as in intensive local outbreaks, or in institutions where the disease is prevalent, since some immunity develops within a few days. Finally, practical experiment with the scarlet fever antitoxin in treatment justifies us in stating to parents that there is an efficient antitoxin for the treatment of scarlet fever. If the case is at all serious, it is the method of treatment that certainly should be considered by the parent and the physician.

MEASLES

This is not only a serious disease in itself, but also in its acute and chronic respiratory and other sequelae. It is an especially dangerous disease to children under 1 or 2 years of age. This point is very effectively emphasized in the weekly health review of the Department of Health of Detroit for January, 1926. The figures cited for measles indicate that while the disease occurs in greater volume among children over 2 years of age, the fatality rate among the infants is decidedly more serious. In Detroit, in January, 1926, among the 3,981 cases of measles occurring in the over 2 years of age group, there were 17 deaths, giving a ratio of .4 per 100 cases. Of the 403 cases among infants under 2 years of age, there were 29 deaths, giving a ratio of 7 deaths per 100 cases. In other words, young children are 18 times as apt to die from measles as older children.

There seems to be no doubt about the effectiveness of convalescent measles serum. A questionnaire was recently sent to 15 leading health officers in the United States, and their replies were all favorable as to the use of this serum in their communities. The difficulty involved, however, is in securing it in sufficient quantities to make it at all practicable as a health administrative procedure. Therefore, it may be unwise at this time to create a demand for a service which cannot universally be met; but physicians should be familiar with this possibility. Where the serum is difficult to obtain, the doctor will probably prefer to give it only to the younger children. The protection lasts only a few weeks, but may save a life.

Little popular comment need perhaps be made as yet, pending confirmation and practical development, concerning the recently announced discovery by Ferry and Fisher in Detroit of a streptococcus causing measles, and of a toxin and antitoxin for diagnostic, prophylactic, and treat-

ment purposes, which may soon place measles definitely in the same preventable class as diphtheria and scarlet fever.

So much for an incomplete discussion of the immediate opportunities in the field of immunology. These are concrete and definite, and mean not only specific disease prevention, but longer, happier, healthier, and more productive lives.

Space does not permit consideration of typhoid vaccination in childhood—a procedure that should be more widely urged; of the circumstances necessitating the use of tetanus antitoxin, and of preventive treatment for rabies; of the more doubtful value of the prophylactic and therapeutic use of whooping cough vaccine; of the recent promising development in France of a vaccine for the protection of infants against tuberculous infection—still in an experimental stage. But it is certainly true that however effective may be certain of the more recently developed refinements of child health work, we cannot afford to ignore these fundamental procedures any more than we can wisely neglect the basic sanitary equipment for child life, including safe milk supplies, pure water supplies, adequate school ventilation, and general community sanitation.

The nutrition specialist and the health educator can build their permanent structures only on the foundation laid by the sanitarian. This work must be underwritten by the laboratory technician with his test tubes and vaccines, and by the practicing physician or clinic chief with his diagnostic eye and hypodermic needle!

On a basis of the earlier sanitary and epidemiological developments, we are now building a personal hygiene and health educational structure of vital importance, especially in school life. There is, however, one important phase of personal hygiene still largely unexplored and neglected, yet constituting a tremendous and immediate opportunity in child health conservation; that is, the field of mental health.

MENTAL HYGIENE

Of course, for local organizations and local health and medical workers successfully to tackle this problem requires most careful study and preparation. There are relatively only a few people at the present time, within or without the medical profession, who are adequately trained and experienced safely, wisely and constructively to deal with the normal or abnormal mental life of the child or adult. It is a limited field in which there are few experts, and in which not a great deal of research leading to popular conclusions has been carried out. Still, while we should approach it cautiously, there are a few things that can with advantage be said and done, and there are a few phases of this problem that can be pushed forward by the rank and file of us, under the guidance of the specialists.

It was recently stated by a leader in this field, Dr. Frankwood E. Williams of the National Committee for Mental Hygiene, that there were in the public schools of this country to-day, one million children who would later be inmates in insane asylums. What can be done about it? Do we know who they are now? No, but to some degree we can find out, though the process of doing so is costly. An intimate psychological sifting of the school population would certainly pick out a fairly substantial number of these potential million mental inadequates. Presumably, some day that will be done, though just what the machinery will be, and what the cost, still remains to be demonstrated on any extensive scale.

If by some means these children could be picked out we would find that they would fall in several main groups. First, there would be those in the *mental deficiency* class ranging from morons to imbeciles. Then, there would be the group with definite incipient signs of future *true insanities*, including those with paranoid, dementia, and manic-depressive tendencies. Finally, there would be a much larger group which may not altogether, strictly speaking, belong in Dr.

Williams's estimate of the million potentials. They are those who will later have "nerves"—the neurasthenics, the hysterias, the *maladjusted*, ineffective, unhappy individuals who probably constitute a great many more than a million of the children in the schools to-day.

For purposes of practical and semi-popular consideration, let us leave the first two groups to the psychiatrists and the alienists. They certainly require professional consideration, as indeed do also the last group of the mentally maladjusted. However, for this last group much can be done in a preventive way by proper understanding and wise guidance on the part of parents, teachers, and other educational influences in the community.

Of fundamental importance is the whole procedure of education, and the educational environment of the child both at home and at school. A school and home life open to real and enjoyable participation for the child is vital to his health. The old, artificial mind and sense training, the learning by rote of past years, is as inadequate for the purposeful development of the normal mind as for the training of the feeble mind. Recent experiments in training mental defectives have produced marvelous results where there has been substituted for the orthodox sense training of the feebleminded, a method whereby the teacher has been able to arouse and participate in the normal interests within the congenitally limited range of the patient, and through this relationship has been able to lead the emotional life of the patient to demand wider contacts. The application of this to the normal means the sounding of natural instincts and tendencies, and the diverting of desires and intellectual interests into expanding useful channels. Just as the feebleminded patient resists unwelcome pressure in artificial sense training, and refuses "to play," so the normal child, if subjected to artificial arbitrary government, beats a retreat and establishes a habit of flight from reality, paving the way for similar reactions later, manifested by the maladjustments and perversions of adult life.

You must remember that this principle of wise development of normal, controlled expression or sublimation, in contrast to artificial arbitrary direction or suppression; this purposeful creative direction of energies for positive good, in contrast to suppressive control exercised through ignorance, fear, or deceit—all applies with particular force to the most universally pervasive and moving element in the child's unconscious (and sometimes conscious) mind, namely, his natural instinctive sex life and sex interests. While something can be done in sex education and wise guidance of sex interests through groups, as in the schools, the job is primarily one for parents, and most parents are very poorly educated themselves in this regard, and need re-orientation before they can fittingly function.

Out of all the haze of uncertainty in the mental hygiene field, what constitutes a practical understanding, leading to a concrete opportunity for child health conservation on the part of the parents? What can we actually tell parents?

The first advice to parents should be that they endeavor to know their children, and if a child is abnormal in any way, mental or physical, that they try to discover the cause. Is the child backward? Does he lie? Does he steal? Is he a "bad boy"? In reality these are symptoms requiring a rational diagnosis and treatment.

To tell a child to be good is about as logical and effective as telling an adult not to worry. We still have throughout our health literature numerous slogans admonishing people to "be cheerful and don't worry." As Dr. Frankwood E. Williams has pointed out, this is all a part of the false pseudo-philosophy of "smile, smile, smile"—an effort to try to get the patient "to lift himself by his bootstraps." It is important and essential to find out why he worries, or why he is unhappy or ineffective, and many times, for adults, only the psychiatrists and the

mental hygiene specialists can dig deep enough to uncover and correct the cause.

Now the same thing, of course, applies to the mind of the child. If he has deviations from what is generally considered normal, socially advantageous conduct, we must try to find out the cause. Sometimes the parent or the intelligent teacher can do this. Always the coöperation of the parent and the intelligent teacher is essential to any efforts along this line by psychiatrists, child guidance clinics, etc.

The cause may be of several types. In the first place, mental variations may be based on *physical defects*, or irregularities, especially in childhood. The rules of hygienic living that provide for the child a healthy body, also aid him mentally. Proper food habits, adequate rest, sufficient sleep, and the other routine rules of physical health are fundamental. Many investigations have indicated the importance of the relationship of physical defects to backwardness in school. A recent report by Sir Arthur Newsholme pointed out that among 560 retarded children studied there were many factors beyond mental deficiency which tended to produce or to accentuate marked backwardness in school work. There were 65 cases of defective eyesight, 63 cases of adenoids and infected tonsils, 33 instances of malnutrition, 7 cases of heart disease, etc. This and other studies have indicated that a correction of these physical defects in a large percentage of cases, restores the child to normal scholastic progress.

Another group of causes are to be found in the environment of the child—either the *physical environment* or the *human environment*. Cases have been reported of backwardness and signs of mental deficiency resulting from chronic carbon monoxide poisoning! More important than this, of course, in the child's environment are the attitude and character of the parents. The parent is more frequently to blame than the child himself. Very frequently undesirable mental traits on the part of the child are due to the same traits in the parents or teachers. Careless, harsh, or unfair handling are no doubt common causes of so-called "bad" children.

A certain percentage of cases, on investigation, will turn out to be more or less *defective in intelligence*, or in emotional make-up. These children will need special physical training and special mental guidance in restricted classes in schools. Only by such special care for these mild defectives can we cut off the voluminous stream which this source now contributes to the future inadequates.

When in the analysis of the bad boy, physical defects, genuine mental deficiency, and unintelligent or vicious parental or school supervision are eliminated, you then have left the *mentally maladjusted* type of child concerning which a great deal can be done, both in a preventive and treatment way. The abnormalities of many children are based on unconscious and unremembered impressions of childhood, or early infancy, many of them apparently dating back even to birth traumas. Early unfortunate mental experiences of infancy associated with fears, with the rude balking of natural desires and tendencies, together with similar emotional experiences, frequently burrow deep into the unconscious mind, resulting subsequently sometimes in compensatory or protective habits of mind or body which throw the child superficially into the unruly or backward class. This compensation may find expression in habit motions as well as in mental attitudes. It frequently constitutes a retreat from reality or from what the child unjustifiably fears as reality, leading later to the same method of escape as an adult—the neurasthenic adult, the adult who prefers subconsciously to have a hysterical attack rather than to do that which seems to be undesirable, the adult who avoids meeting fresh issues by consuming all his energy in worrying about old ones. For this adult the important rule of life (as for all adults) is not "forget thyself" but "know thyself," and for parents the identical rule is "know thy child." That

after all is the fundamental object of modern psychiatry as applied to child health, of the habit clinic, the child guidance clinic, and similar movements.

THE CHILD AS A WHOLE

The child is a unit, and all of the factors that may affect its health are tied up together. The general sanitation of the community is important. The sanitation of his immediate environment is important. Wise human guidance is essential. Understanding is essential. His physical personal hygiene is vital not only for his physical life but for his mental life. All of these factors contribute to a well rounded, normal, healthy child life. All of these channels of contribution to child welfare must be utilized if we are to take advantage of certain outstanding immediate opportunities in the field of child health conservation.

EXAMINATION OF THE CHILD BEFORE ENTERING SCHOOL*

ELLEN S. STADTMULLER, M.D.

Director Bureau of Child Hygiene, State Board of Health, San Francisco, Calif.

DURING APRIL and May last year a campaign to provide a physical examination for every child who would enter school the following fall, was carried on in California.

Several considerations gave rise to this campaign. In the first place 6 years had elapsed since the 1918 children's year campaign, which had been notably successful in California, and it seemed fitting that the infants examined that year should have an opportunity of being rechecked before entering school. We hoped to benefit the children themselves by giving an opportunity for improvement in hygiene on the part of the mother, and by the correction of defects, where necessary, during the interim between the examination and the opening of school.

At the time of this campaign California had only 6 full-time county health departments. We felt that our department would benefit by having contact with groups of individuals in the various counties who were interested in child health, and that such persons would assist materially in developing our prenatal program in subsequent years. We also hoped to interest the medical profession in preventive examinations for children, as in many of our rural areas the physicians have no adequate conception of this type of work.

CAMPAIGN PROCEDURE

With these objects in view we called a meeting in San Francisco of individuals who could be helpful with suggestions and whose positions would give weight to our campaign. These included the head of the department of pediatrics of our 2 medical colleges, the state supervisor of physical education (this being the department in California in touch with health work in the schools), the president of the Parent-Teacher Association, the chairman of child hygiene of the Federated Clubs and of the Parent-Teachers' Association, the director of the health center work of Alameda County, which has a well-defined program in active operation in Oakland near San Francisco and in the communities close to Oakland within the county—one of the members

* Paper read at the Third Annual Conference of State Directors of the Administration of the Act of Congress of November 23, 1921, for the Promotion of the Welfare and Hygiene of Maternity and Infancy, held in Washington, D. C., January 11–13, 1926.

of our own board of health most interested in child hygiene. It had been my first intention to pay pediatricians to conduct the examinations during this campaign, but after the meeting of this group that plan was abandoned.

In planning for our organization work we selected 26 counties out of 58. The factors which we judged necessary to make the campaign a success included a friendly medical organization, a county superintendent of schools interested in health (and where, consequently, there would be public-health nurses employed), and an interested group of laywomen who would undertake the necessary committee work. We had in our office a list of all persons with whom we had had any correspondence on child hygiene as well as a list selected from newspaper clippings pertaining to the same subject. In many counties the home demonstration agent of the farm bureau had started work by conducting nutrition classes so that the public was already alive to the school child's need of suitable diet.

The part which our bureau was to play in this campaign corresponded very much to that which the Children's Bureau played in the national children's year. We furnished organization work through our own staff and by the help of a clubwoman especially employed to form committees; publicity material both for newspapers and for use by word of mouth in talking to groups of men and women; printed forms for the actual examination, including mimeographed copies of height and weight charts. Where the medical society of the county requested it we also furnished a pediatrician to assist them in conducting the campaign.

Our initial step in organization was to address a letter to the county medical societies stating that the estimated number in need of corrections was 30 per cent of all school children, a conservative figure obtained by the result of 2 years' work in San Francisco in a similar campaign. We asked the medical society's endorsement of the work in its county and the appointment of a member of the society to act on the central county committee. The same procedure was followed with the dental societies. As the health officers in rural communities are often laymen these officers were not included in the county committees the first year. This omission of the county health officer from the committee was a mistake; he should be included beside the representative of the medical society, or where he is a medical man, he should act in both capacities.

Our central county committee consisted of a chairwoman, usually from the Federated Clubs or Parent-Teacher Association; a representative from the medical and dental societies; the county superintendent of schools; a public health nurse representing her group (in many counties there was only one nurse employed). A member was chosen to handle the publicity, either the editor of a local paper or some one from the chamber of commerce. The duties of this committee were to assist us in deciding on the location of the centers for the drive—spot-mapping the county, as it were, in selecting local personnel and in distributing the material that we furnished to the local committees. Although this was our skeleton plan it had to be modified in certain areas. We found, especially in counties where there were two rival towns of the same size, that one might not operate under the chairmanship of the other; in such areas we abandoned the county formation and occasionally developed local committees in small counties, forming a committee in each of our union high school districts.

California has largely centralized its school system, and with the transportation by bus the children come from long distances to the high school. Consequently, we found it feasible to make the union high school the center for the particular district in which it is located.

SCHOOL ORGANIZATION VALUABLE

We found the school organization most helpful in that it had well-established channels of communication going out

from the county superintendent's office to the schools. Wide publicity, therefore, could be given to the campaign with the coöperation of the county superintendent of schools. A California law requires the registration of minors during the first week of school, so that there was available in the superintendent's office a list of all preschool children. In this way the individual sheets with notices of the examination were distributed through school children to the homes. The large majority of the conferences were conducted in the school buildings. We fostered this idea as much as possible. In California the schools receive subsidies from both the state and county, based upon average daily attendance. Necessarily they benefit by the superior physical condition of the children examined in such a campaign. The majority of people will go naturally to a school building where they might be reluctant to attend a conference in a privately owned building. In one county the superintendent of schools urged upon teachers the necessity of obtaining an accurate list of children entering school by questioning the pupils. She also assisted by calling together representatives from every organization in the county to attend a central meeting at which the object of the campaign was explained. As this county was small and road facilities radiated from the county seat it was arranged to bring all children there by automobile from outlying districts rather than trying to transport them across intervening mountainous country. In this way, too, the time of the physicians, most of whom lived in the county seat, was conserved.

Only one of the 26 counties originally selected was so uninterested that we abandoned the plan to hold a campaign there. We were obliged, however, to forego it in a number of others on account of an epidemic among cattle. For every county so eliminated from our list we had another come forward and ask that it be given the opportunities of such an examination. Consequently we finished with the number of 26.

We studied the permanence of population in the territory to be covered. In many places half the population moves down into the valley or to the coast for the winter. So we felt that in omitting those areas we were not really slighting a very large proportion of children. This year we have nurses in some of those counties and have put the campaign on.

SECOND CAMPAIGN

In our second year's plans we benefited by the experience of our first year in starting our work of organization earlier and in adding to our staff a speaker to address local groups after the initial formation of committees had begun. This year we selected 31 counties and employed 3 persons during February and March to revive the committees of the first year and to form new ones. Many communities were ready to conduct this campaign without our having to do the organization work, writing in to know if we were ready to furnish material such as they had used the year before. This year we included the health officer and were more active in reaching the dental societies in planning our central committees. We also furnished motion picture slides to be run the week before the campaign. These stated briefly the need for such a physical examination, the local time and place being added. This proved a most successful method of reaching large audiences who spread the news of the local arrangements.

INTEREST OF LOCAL PHYSICIANS AND NURSES

We realize that these examinations were probably not as uniform as they would be if they had been made by trained pediatricians; but we believe that the interest and stimulus given to the local physicians in regard to the health of children might be of more benefit than a more careful initial examination made by a stranger who left the community. During the 1924 campaign only 18 days' work

were needed from pediatricians paid by the state; 12 of these were spent in one county at the request of the health officer of a full-time county unit. The director of the bureau did 11 days' work scattered in 3 counties in assisting in the campaign. In 1925 only 11 days' work from employed pediatricians were necessary, although the territory was at least one-third larger than that covered the year before. The medical staff of the bureau put in 6 days in assisting in the campaign. The second year, however, we endeavored to have our organizing nurses return to the counties during the week of their campaign and assist the local nurses in conducting the conferences.

NUMBER OF CHILDREN EXAMINED

We estimate roughly that in each year's campaign we reached one-sixth of the actual number of children entering school. In the first year 4,552 children were examined and last year 8,193 were examined. Although 4 counties did not report, we have nevertheless a list of 363 physicians, 111 dentists, 178 public health nurses and 481 lay workers who assisted during the 1925 drive. Local physicians realize the impetus given to their work by such a campaign. The comment, "I was very rushed for 2 weeks after your spring campaign" indicates that parents are anxious to build up the health of their children and consequently have many of the indicated corrections made.

PUBLICITY AND RESULTS

The popularly known "*yellow sheet*" of our publicity program was used for advertising purposes. It has been criticised and called "scare headlines." We rather hoped it would be. We wanted to make people, if possible, bring these questions home to their own children. These "yellow sheets" were for the most part distributed through the school children. It has been my original idea that these would be wrapped up with packages in the grocery, and put into library books distributed from our branch county library, but that plan did not work out so well.

The results are significant enough to justify such an organized effort. For every 100 children in this last year's campaign, we had an average of 260 defects. Of course, many of these were minor, teeth defects predominating very largely.

In California we have no compulsory vaccination law and the first year we found that a little less than 10 per cent of the entering school children had been vaccinated. We have had a very virulent type of smallpox this year, and at the end of this year's campaign we found approximately 20 per cent of the school children vaccinated. Although this is double the number for last year, it is still far below what it ought to be. Immunization has been done very extensively among the school children; however, not so extensively in the preschool group.

The first year, in many of the rural communities, if a mother came in with a number of children they were all accepted. We had expected to limit the campaign to the group aged 5 to 7 years, but we did not turn any away. We were able to make graphs of the increasing defects in children from 1 to 8 years of age. One graph represents about 100 children and another represents 341, the larger number being scattered in this intermediate group that we were trying to meet. That was a very interesting chart, showing the increase in defects. We found that 75 per cent of our children had some need for medical work to be done, and in the 8-year-old group 82 per cent were in need of it. So we feel that there is a great deal of work ahead, both for the medical profession and for ourselves.

STUDIES ON LACTOSE FERMENTING BACTERIA*

FRED BERRY

Chief, Division of Laboratories, Ohio State Department of Health, Columbus, O.

THE CHANGE from a 72- to a 48-hour incubation period[1] in the presumptive test for the colon group apparently has met with general favor among water analysts. At least no serious objection has appeared in the literature. Levine[2] has concluded that "a small amount of gas in 24 hours is a more reliable index of *Bact. coli* than 10 per cent or more gas in 48 hours." Our experience in examining each year a large number of samples collected from practically every class of water supply has strengthened our confidence in the shorter incubation period, and it confirms Levine's observation on the significance of early gas formation. Not infrequently, however, especially in examining public supplies, we have noted gas production near the end of the 48-hour period and we have been in doubt as to whether such samples should be considered completely negative. These occurrences suggested the desirability of determining the nature of the slow gas forming organisms. The present studies were made on ground waters. Additional studies are being made on treated surface waters.

Published data on the character of slow lactose fermenting bacteria in natural water is somewhat meager. Apparently the Committee on Standard Methods of Water Analysis in their 1912 report felt that delayed fermentation might be due in many instances to *attenuated B. coli*, since the reference cited is the report of Hale and Melia[3] in which delayed lactose fermentation had been observed in pure cultures of *B. coli* stored in water under experimental conditions. It would seem, in view of the importance attached to the presumptive test, that additional data on this point might be of value.

Wood[4] reports that "the M.R.– strains isolated from cereals and grain frequently showed very weak lactose fermentation and this sometimes only after several days." In a previous study Savage and Wood[5] noted "weak lactose fermentation" in cultures isolated from sewage infected water stored for 14 days. Hale and Melia[3] found that, after a sojourn in natural water stored in glass bottles, pure cultures of *B. coli* lost their fermentative power. Presumptive tests in lactose bile were positive in 24 hours at the beginning of the experiment but at the end of 16 days' storage no presumptive tests were positive before 72 hours.

Bronfonbrenner and Davis[6] encountered several cultures in foods which produced gas only after several days' incubation. These were eventually identified as *B. coli*.

Koser[7] isolated from canned ripe olives many cultures which, when first isolated, produced gas in lactose only after 3 or 5 days' incubation. The same investigator found among 72 colon group cultures isolated from soil, 14 which exhibited delayed lactose fermentation. The latter gave no evidence of fermentation until after 3 or 4 days or occasionally longer.

* This paper, covering the Occurrence and Sanitary Significance of Slow Lactose Fermenting Bacteria in Ground Waters, is the second of a series of papers to appear in the JOURNAL. The first was in May issue and the third will appear in July.

SOURCE OF SAMPLES AND METHODS OF ANALYSIS

The samples included in this study were collected in duplicate from private and semi-public water supplies along the principal highways of Ohio. These supplies included almost every type of dug, driven or drilled wells, and a few springs. On the basis of a careful sanitary survey each supply was graded "good," "fair," or "poor." Samples were collected in several series extending over a period from June to January. The extremes of temperature and rainfall in this locality are usually encountered in this period. No seasonal difference was noted in the prevalence of slow lactose-fermenters.

The samples were collected in 4-ounce bottles, and were examined according to Standard Methods of Water Analysis. Two 1 c.c. and two 10 c.c. portions from each sample were inoculated into lactose broth. Regardless of any irregularities in the presumptive results in the routine test, all presumptive tubes considered negative at 48 hours were incubated 7 to 10 days longer for evidence of delayed lactose fermentation.

It was found that in the series of 640 samples, 231 gave a negative presumptive test after the standard incubation period of 48 hours. Of these 231 negative samples, 59 gave at least 10 per cent gas in one or more presumptive tubes by the end of 7 days' additional incubation at 37° C. In 409 of the 640 samples examined, 10 per cent or more gas was formed in 48 hours in one or more of the 4 tubes inoculated from each sample. The negative tubes from these 409 samples were reincubated, and it was found that 20 of the 280 negative 1 c.c. tubes and 28 of the 105 negative 10 c.c. tubes had developed 10 per cent or more gas at the end of 7 days' additional incubation.

STUDY OF TYPES FOUND IN DELAYED POSITIVE PRESUMPTIVE TUBES

All tubes showing 10 per cent or more gas at 72 hours or later were plated on Endo or eosine-methylene blue agar in the usual manner, and if growth occurred, at least 2 colonies were fished into lactose broth for confirmatory gas. Special tests consisted in determining the methyl red and Voges-Proskauer reactions on all cultures and comparing this with their ability to grow in Koser's citrate medium, as well as in making agar slants from which microscopical examinations were made. In selecting colonies an effort was made to obtain representatives of each type present. This was not difficult in most instances since there were seldom more than 2 types on a plate. More often we found only 1 type of colony. Frequently the colonies were well developed in 24 hours and were more or less characteristic of aerogenes or cloacae, but in many instances 48 or even 72 hours' incubation was necessary before making transplants. The latter plates usually contained colonies differing in color and morphology from types found in routine plates made from 24 and 48 hour presumptive tubes. When no colonies appeared on plates incubated 72 hours, it was assumed that the presumptive gas was due to anaerobes. However, before concluding that this was true, at least 2

TABLE I

COMPARISON OF RATE OF LACTOSE FERMENTATION, METHYL RED AND VOGES-PROSKAUER REACTIONS AND GROWTH IN KOSER'S CITRATE MEDIUM

Total cultures isolated—147	MR+	MR—	V.P.+	V.P.—	Growth in Koser's citrate medium +	Growth in Koser's citrate medium —
44 gave gas in 24 hours*	5	39	36	8	42	2
20 gave gas in 48 hours	4	16	13	7	19	1
14 gave gas in 72 hours	5	9	9	5	11	3
21 gave gas in 10 days	3	18	13	8	18	3
99 (Totals)	17	82	71	28	90	9
48 gave no gas in 10 days	8	34	33	9	34	7

* This refers to confirmatory gas in pure cultures.

attempts were made to obtain colonies on plates. This procedure was followed in an effort to recover any aerobic forms present, regardless of the presence of anaerobic types in the same tube.

Of 168 presumptive tubes (from 79 samples) which were positive at 72 hours' or longer incubation, 149 gave growth on plates, 14 were apparently due to anaerobes, and 5 failed to give gas in subsequent transfers to lactose so that it was impossible to determine the fermenting types originally present in the latter.

ANAEROBIC LACTOSE FERMENTERS

No attempt was made to study the types of anaerobes present. For our present purpose we confined our work to simply demonstrating the absence of aerobic types. However, we tested the 14 tubes mentioned above to determine whether the anaerobic forms were spore formers. A portion of the original presumptive culture was inoculated into 2 lactose broth tubes, one of which was subsequently heated at 80° C. for 10 minutes. Both the heated and unheated tubes were then incubated at 37° C. for several days. Twelve gave gas in the heated as well as the unheated cultures, indicating that the majority of anaerobic types encountered were spore formers.

AEROBIC SPORE FORMING TYPES

Microscopical examination of all aerobic cultures in the collection of slow gas formers showed 12 to be spore bearing types. When tested in Koser's citrate medium these were classified into 1 fecal and 11 soil strains. The significance of these aerobic spore formers in ground waters is indicated rather clearly by the results of Norton and Weight [9] on the relative distribution of such types in nature and in surface water.

AEROBIC NON-SPORE FORMING TYPES

These constituted by far the greater portion of all cultures encountered. The types found were classified on the basis of the methyl red and Voges-Proskauer reactions, and citrate utilization. This classification as well as the rate of gas formation in pure culture is shown in Table I.

It will be seen from these results that out of a total of 147 cultures made from plates, 44 gave confirmatory gas in 24 hours, 20 gave gas in 48 hours, 14 gave gas in 72 hours, and only 21 continued to show delayed fermentation. The 48 which gave no confirmatory gas in 10 days are not considered among the slow gas formers, but are included in this table to show the relative number of colonies isolated from late presumptive tubes which failed to give confirmatory gas. It was somewhat surprising to see that so many cultures gave gas within 48 hours on the first subculture from plates.

Bronfonbrenner and Davis [6] found that most of their cultures which fermented slowly on Endo plates gave gas slowly after subculturing in liquid media containing lactose, but by successive transfers, or by modifying the per cent of lactose, they were able to obtain prompt fermentation with all strains tested. However, the return to this state of activity was not accomplished so rapidly as in our experience. They mention 2 factors as possibly explaining the mechanism of the rejuvenation, viz., a gradual adaptation of successive generations of bacteria, and the concentration of lactose in the medium. It is of some interest to note that while these investigators report an increased rate of gas formation in concentrations of lactose above 1 per cent, Wagner and Monfort [10] consider lactose somewhat inhibitory for *B. coli* even in 1 per cent strength and recommend one-tenth of 1 per cent as giving optimum results in water analysis.

Koser [8] reports that many of his soil strains gave gas more promptly on the second and subsequent cultures in lactose. Some of his strains, however, continued to show slow gas formation. The proportion found in this study to be permanently slow gas formers was not large.

It is not uncommon for many cultures to return to normal biological activities after a process of rejuvenation by successive transfers but the change in activity of cultures in this series occurred rather abruptly after only 1 transfer to plates. This may have been due to the fact that in the second fermentation tube the organism was growing in pure culture and not affected by other water bacteria.

Further reference to Table I shows that 90 of the 99 cultures, which gave confirmatory gas, grew in Koser's citrate medium. Of the 9 citrate-negative cultures, 5 were quite typical of fecal types in their methyl red and Voges-Proskauer reactions; 2 were slightly atypical, 1 being weakly positive to methyl red, the other giving a doubtful Voges-Proskauer reaction; 1 was not retested, and 1 gave negative methyl red and Voges-Proskauer reactions.

CLASSIFIED AS TO SOURCE

Delayed presumptive gas was observed in 79 samples collected from 44 "good," 21 "fair," and 14 "poor" supplies as determined by sanitary survey. Of these samples 59 were completely negative at 48 hours, and 41 of these 59 supplies were classed "good," 14 "fair," and 5 "poor" by field surveys. Citrate-negative cultures were obtained from 6 supplies classed "good."

REJUVENATION TESTS

Plates streaked from 48 presumptive tubes showing late gas formation gave no evidence of growth. A second lactose broth tube was inoculated liberally with a portion of the original presumptive tube. Readings were made daily on these secondary lactose broth tubes. It was found that whereas none of the 48 original tubes had shown gas formation until 72 hours or longer, 10 of the secondary lactose tubes showed 10 per cent or more gas in 24 hours, 19 gave gas in 48 hours, 10 in 72 hours, 5 in 10 days, and 5 showed no gas at 16 days. Thus one additional transfer into lactose broth enhanced the fermentative ability so that 29 tubes were positive in 48 hours. Of the latter tubes, 21 gave colonies on plates, and typical aerobic, non-spore forming colon group organisms were isolated. The remainder of the 48 tubes represent 14 in which gas production was apparently due to anaerobes, and 5 which failed to give colonies on plates or secondary gas formation. The 21 strains which had shown slow gas production (10 days) on first subculture were retested in lactose broth with the following results:

1	gave gas	within	72 hours
6	gave gas	within	4 days
4	gave gas	within	10 days
11	gave no gas	within	21 days

This loss of ability to ferment lactose is of interest. Bahlman and Sohn [13] noted this among their atypical colon-group cultures.

Few investigators in studying the effect of storage on colon bacilli in water have noted the effect such storage might have on the rate of lactose fermentation. Hale and Melia [3] found that ability to promptly ferment lactose was lost on continued storage. They also observed that by planting samples into dextrose and then into lactose bile a higher percentage of *B. coli* was obtained than by using lactose bile alone. They considered this excess *B. coli* to be attenuated forms. Koser [11] reports that pure cultures of colon bacilli survive a long time, when seeded in sterilized water and soil, and that these cultures retain their ability to ferment lactose promptly. Several studies [12] have shown that colon bacilli do not survive for a very long period in natural water. In our studies of natural ground waters the evidence obtained by differential tests indicates that very few of the colon group organisms showing delayed fermentation of lactose were of fecal origin. It would seem more proper to class the majority of these as soil strains, which attack lactose somewhat tardily, rather than as fecal strains which had lost their ability to ferment this sugar promptly.

SUMMARY

The results obtained in 640 samples of *ground water* confirm the opinion expressed by the Committee on Standard Methods of Water Analysis that bacteria which do not produce 10 per cent or more gas in 48 hours at 37° C. in 1 per cent lactose broth are of slight sanitary significance.

In 79 samples which were negative at 48 hours, more than 10 per cent presumptive gas had formed within 7 days' extra incubation. Of the colon-group cultures isolated from these samples 91 per cent probably were soil types as evidenced by their ability to grow in Koser's citrate medium. Furthermore, the sanitary survey of the wells from which these samples were obtained showed that 44 were free from any probable sewage pollution, a fact which adds support to the belief that the organisms isolated were of soil origin.

About 20 per cent of the cultures isolated apparently attack lactose very slightly and tardily, but the majority of cultures showed rather prompt fermentation of this sugar on second and subsequent transfers. It is probable that inability of many of these cultures to ferment lactose promptly in presumptive tests may be due to the influence of associated bacteria rather than to actual attenuation.

NOTE: Grateful acknowledgment is made to Mr. W. H. Dittoe, Chief, Division of Sanitary Engineering, for permission to utilize all field data; to Mr. C. S. Slade, Assistant Engineer, and Dr. W. P. Johnson, who made the sanitary surveys and collected all samples; and to Miss Muriel Snyder, who conducted the routine analyses of samples and gave much valuable assistance in the special studies.

REFERENCES

1. A.P.H.A. *Standard Methods of Water Analysis*, 1912, Second Edition, p. 87.
2. Levine, Max. Bacteria Fermenting Lactose and Their Significance in Water Analysis. Iowa State College, *Bull. 62*, 1921, p. 60.
3. Hale, F. E. and Melia, T. W. *J. Infect. Dis.*, 7:587, 1910.
4. Wood, D. R. *J. Hyg.*, 8:493, 1919.
5. Savage, W. G. and Wood, D. R. *J. Hyg.*, 16:16, 1917–18.
6. Bronfonbrenner, J. and Davis, C. R. *J. Med. Res.*, 39:33, 1918.
7. Koser, S. A. *J. Agri. Res.*, 20:375, 1920.
8. Koser, S. A. *J. Bact.*, 9:59, 1924.
9. Norton, J. F., and Weight, J. J. *A.J.P.H.*, 14: 1019, 1924.
10. Wagner, E. A. and Monfort, W. F. Ill. State Water Survey, *Bull. 16*, 1918–19, p. 263.
11. Koser, S. A. *J. Infect. Dis.*, 35:315, 1924.
12. Rogers, L. A. *Abst. Bact.*, 1:56, 1917; Winslow, C.-E. A. and Cohen, B., *J. Infect. Dis.*, 23:82, et al, 1918.
13. Bahlman, C. and Sohn, H. *J. Am. W. W. Assn.*, 11:416, 1924.

RELATION BETWEEN HEALTH SUPERVISION IN SCHOOLS AND INDUSTRIES

C. O. SAPPINGTON, M.D., DR.P.H.
Medical Director, Montgomery Ward & Company, Oakland, Calif.

THE BASIS of what may become a very important approach to a preventive medicine program for industry has been stated by Dr. C. T. Graham-Rogers.[1] He says, "The younger worker must look to the schools for an education in general public health and also safety in industry. The public schools, trade and technical schools and private institutions should realize that theirs is the real place to install preventive measures against accident and health hazards, and to urge the use of safety devices in their manual training departments, so that the minor in later life, from force of habit, will insist upon such measures being provided by his employer."

It should be recognized that when the young adult or adolescent presents himself as a candidate for physical examination pursuant to employment, he represents the composite results of health

TABLE I

EXAMINATION CLASSIFICATION WITH REGARD TO AGE AND SEX OF APPLICANTS AT THE OAKLAND PLANT OF MONTGOMERY WARD & CO.

Males

Age	15–19	20–29	30–39	40–49	50–59	Total	Percentage of total
Accepted	384	162	30	9	4	589	77.5
Provisional	82	36	5	3	5	131	17.2
Rejected	24	9	2	3	2	40	5.3
Total	490	207	37	15	11	760	56.3

Females

Age	15–19	20–29	30–39	40–49	50–59	Total	Percentage of total
Accepted	304	134	27	6	5	476	80.7
Provisional	67	32	2	1	0	102	17.3
Rejected	7	4	1	0	0	12	2.0
Total	378	170	30	7	5	590	44.7

training received at home and at school. With this principle in mind, it would seem reasonable to assume that if children could be brought to adolescence and young adult life with good nutrition, well grounded in proper health habits, and physical defects corrected, the problems of preventive medicine in industry would be at least partly solved.

TABLE II

EXAMINATION OF 234 HIGH SCHOOL BOYS KNOWN TO BE 7 PER CENT OR MORE UNDERWEIGHT, ALSO THOSE EXCUSED FROM GYMNASIUM WORK

Defect	Number	Percentage
Palpable glands	43	18.4
Questionable lung conditions	33	14.1
Postural defects	33	14.1
Heart murmurs and enlargement	28	12.0
Carious teeth	21	9.0
Tonsils infected	21	9.0
Nasal defects	16	6.8
Heart disease	12	5.1

PHYSICAL EXAMINATION OF 556 HIGH SCHOOL GIRLS

Defect	Number	Percentage
Thyroid, enlarged, adolescent	159	35.0
Palpable glands	129	23.2
Carious teeth	96	17.3
Heart murmurs, enlargement	94	16.9
10 per cent underweight	87	15.6
Questionable lung conditions	84	15.1
Tonsils, cryptic, inflamed	54	9.7
Abdominal tenderness	44	7.9
Nasal defects	22	4.0

TABLE III

COMPARISONS OF FINDINGS IN A SCHOOL—1 WITH MEDICAL SERVICE AND SCHOOL 2 WITHOUT MEDICAL SERVICE AT OAKLAND, CALIF.

	School 1 Per cent defective	School 2 Per cent defective
Not vaccinated	46	71
Foot troubles	38	28
Posture	46	80
Carious teeth	30	73
Nutrition	27	28
Throat	25	76
Nose	10	17
Eyes	7	14
Ears	3	1
Heart	3	7
Skin	2	4
Lungs	0	1

A tabulation of the physical defects of 1,350 persons examined at Montgomery Ward & Company (Oakland, Calif.) during 1925 is also of interest here. (See Table I for age and sex grouping and examination classification.)

This attitude is again of importance because of the large number of young persons who are each year going from the schools to take their places as wage earners in industrial and commercial organizations. A recent survey of the schools in San Francisco by the San Francisco Tuberculosis Association[2] has shown that 92 per cent of pupils leave the public schools to directly enter industrial work. A further check on this situation may be had by reference to the age grouping in Table I of examination data (1925) of the Oakland plant of Montgomery Ward & Company.

The significant fact is that 64.3 per cent of those examined were under the age of 20 years and 92.2 per cent were under 30.

RANDOM COMPARISONS

Reliable data on sickness incidence and physical defects of public school pupils are not easily obtainable. Only a few random samples will be exhibited.

The San Francisco Tuberculosis Association[2] has recently examined a number of high school boys and girls and charted the results. These data are shown in Table II.

An interesting survey of two Oakland, Calif.,[3] city schools disclosed some very interesting information. This is given in Table III.

In comparing the results of examinations in schools and industries, it will be noted that the list of defects is very much the same among the adolescents and young adults in industry as it is among the school children. A direct comparison of the percentages of these defects noted in the

TABLE IV

PHYSICAL DEFECTS IN ORDER OF PERCENTAGE OCCURRENCE AT THE PLANT OF MONTGOMERY WARD & CO.

Males—760

Defect	No. cases	Percentage
1. Acne	344	45.3
2. Underweight	342	45.0
3. Hist. serious illness	264	34.7
4. Carious teeth	186	24.4
5. Relaxed ing. rings	160	21.0
6. Lung conditions	127	16.7
7. Defective vision	95	12.5
8. Relaxed trans. arches	83	10.9
9. Enl. and inf. tonsils	80	10.5
10. Varicocele	76	10.0
11. Flat feet	73	9.6
12. Poor posture	61	8.0
13. Rapid pulse	59	7.8
14. Loss of over 1 week, past yr.	54	7.1
15. Hist. of major op.	53	7.0

Females—590

Defect	No. cases	Percentage
1. Hist. serious illness	195	33.0
2. Hist. dysmenorrhea	171	29.0
3. Underweight	168	28.5
4. Carious teeth	90	15.2
5. Rapid pulse	81	13.7
6. Acne	73	12.4
7. Defective vision	65	11.0
8. Hist. major op.	64	10.8
9. Enl. and inf. tonsils	55	9.3
10. Loss over 1 week, past yr.	51	8.6
11. Poor posture	48	8.1
12. Rise in temp.	42	7.1
13. Thyroid enlargement	41	6.9
14. Lung conditions	36	6.1
15. Overweight	24	4.0

scholastic and industrial experiences would not be rational because of the fact that the data concern different individuals. Finally, one must say that the figures present too small a number of cases from which to draw any conclusion.

DISCUSSION AND SUGGESTIONS

Hayhurst[4] has quite recently suggested that perhaps there is a lack of adequate health supervision for children between 12 and 16 to 20 years of age—this being the period of greatest importance in the correction of serious defects and chronic afflictions.

If different groups of children could be examined while in school and the records preserved and compared with an examination made later in an industrial establishment, it would appear that we would have a fair estimate of the efficiency of health work in schools. To bring about the consummation of this plan would involve:

1. The use of standardized record forms and a manual of examination procedure.
2. The adoption of a rating scale applicable to physical defects.
3. Use of records and rating scale upon the same individuals, comparing physical status in school and in industry.
4. A study of the relation of physical defects to absenteeism both in schools and industries.
5. The institution of an efficient follow-up system for the correction of defects.

It seems rational to believe that the basis for industrial health work may therefore be largely grounded in school health supervision and that the human product may be improved in the direct ratio in which school health work becomes more efficient. Gradually this should cause industry to become more than casually interested in the raising of standards of school health; in fact, one may say that there might come a day when the larger industries would contribute in a material way to the advancement of health work in schools. A real program of preventive medicine in industry could thus be developed.

REFERENCES

1. Graham-Rogers, C. T. Relation of Health Departments to Industrial Hygiene. *A.J.P.H.*, 16, 2:117 (Feb.), 1926.
2. Higby, W. F. Personal Communication San Francisco Tuberculosis Association.
3. A Recent School Health Survey. *Alameda County Public Health News*, 4:7 (Feb.), 1926.
4. Hayhurst, E. R. Personal Communication.

B. COLI IN MARKET OYSTERS

FRED O. TONNEY, M.D., AND JOHN L. WHITE, M.D.
Research Laboratory, Chicago Health Department

THE B. COLI content of shellfish has been adopted by the American Public Health Association as an index of the sanitary quality of this sea food. The *B. coli* findings, according to the standard procedure, are expressed in the form of a score, which is an arbitrary summation of values based upon the presence or absence of the organism in multiple portions of the sample examined. The score generally adopted for control purposes by enforcing agencies in producing districts is not to exceed 50 for both shucked and shell oysters.

Recently this laboratory was called upon to recommend reasonable *B. coli* standards for shellfish, which would be applicable to an inland market located at a distance from the point of production. It became apparent that to formulate a rational opinion on this subject, information as to the extent of multiplication of *B. coli* in shellfish during shipment and storage was necessary.

To ascertain whether or not an increase occurs in the *B. coli* content of oysters kept at storage temperatures, the authors determined the *B. coli* scores on successive days in a series of 22 samples of fresh unchlorinated oysters kept at 5° to 8° C. These oysters were carefully shucked in the laboratory and enough oyster liquor reserved to permit daily *B. coli* scores to be made for 12 to 16 days. The scores were made on the undiluted oyster liquor withdrawn from the sample as used and tested according to the technic outlined in the Standard Methods. Completed *B. coli* tests were run on each fermentation tube showing gas. These scores are shown in Table I.

Series 1 covered 22 samples of freshly shucked oysters. When tested in December the total scores showed a percentage increase of 458 per cent in *B. coli* content in 12 days of storage at 5° to 8° C. This increase occurred between the 3rd and 12th days. During the first 2 days there was a percentage decrease of 27 per cent and 8 per cent respectively. Despite the total increase in *B. coli* score, the highest average score of the whole group of samples was but 119, which if reported in terms of the nearest unit of the standard scale would be 140. The individual scores during the 12-day period show that during the 1st week of storage 18, or 82 per cent, of the samples did not reach a score of 140.

In previous work on this problem two additional series of samples were tested for increase in their *B. coli* content during storage. The technic of the method used in determining the *B. coli* content differed from the above experiment in that the scores were made on the diluted sample instead of the undiluted liquor. A sufficient number of shucked oysters was added to 200 c.c. of sterile 2 per cent salt solution to bring the total volume of the sample up to 400 c.c. and from this diluted specimen, placed in storage at 5° to 8° C., liquid for the test was withdrawn as required. In this series the completed *B. coli* confirmatory tests were made on two fermentation tubes of each specimen showing typical gas formation (*i.e.*, 10 per cent or above) and in addition, upon all fermentation tests showing less than 10 per cent of gas.

The first series of samples in these experiments consisted of shucked oysters

TABLE I

B. COLI SCORES OF SHUCKED OYSTERS HELD IN STORAGE AT 5° TO 8° C.

Sample Number	Initial Score	Score after storage classified by age in days: 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1-D	23	32	23	32	41	32	5	50	140	50	50	41	320	320	440	440
2-D	5	41	140	50	32	140	230	50	230	41	41	50	230	140	230	230
3-D	5	1	0	14	14	23	4	14	4	14	5	23	320	41	140	32
4-D	3	14	41	140	50	32	50	320	230	41	23	140	320	41	500	140
5-D	5	5	41	320	230	140	320	500*	320	140	41	2	...	...	...	...
6-D	23	4	14	3	3	4	2	14	4	32	14	32	32	50	23	23
7-D	14	23	5	4	14	14	14	5	32	14	23	41	14	23	23	32
8-D	50	50	32	50	230	230	500*	500*	500*	500*	500*	500*	...	...	...	...
9-D	32	23	23	23	23	32	23	32	230	50	50	230	230	50	230	32
10-D	23	14	5	5	14	23	23	50	140	14	41	5	50	50	140	140
11-D	5	4	3	5	5	1	50	41	14	50	41	41	50	...	...	...
12-D	14	5	5	14	50	50	32	50	23	410	41	230	41	...	...	...
13-D	5	3	3	2	2	2	2	23	2	41	14	5	41	...	...	...
14-D	23	5	5	5	2	1	14	23	3	14	5	230	32	...	...	...
15-D	23	4	41	23	41	41	50	50	230	50	140	230	140	...	...	...
16-D	41	14	3	4	3	2	5	4	5	23	41	50	32	...	...	...
17-D	32	5	5	3	3	3	5	3	41	32	32	23	23	...	...	...
18-D	23	5	4	23	5	5	23	23	23	50	32	41	230	...	...	...
19-D	32	32	14	5	5	5	14	23	14	23	50	230	50	...	...	...
20 D	41	50	14	14	3	23	41	23	32	230	230	140	140	...	...	...
21-D	14	5	2	4	4	4	4	3	5	3	23	14	41	...	...	...
22-D	50	14	23	23	5	23	3	50	14	14	23	50	41	...	...	...
Total score	486	353	446	776	779	830	1414	1851	2236	1836	1460	2348	2377	715	1726	1069
Percentage increase	...	27†	8†	59.6	60	70.7	190.9	280.8	360	277.7	200	383	458	459	1248	735
Average B. coli score	22	16	20	35	36	38	69	84	102	83	57	104	119	89	216	134
Closest standard score	23	14	23	32	32	41	50	50	140	50	50	140	140	50	223	140

* Maximum score with dilutions employed in test.
† Percentage dicrease.

collected immediately upon their arrival in the Chicago market in October, 1925. These samples according to the shipping records, had been en route 48 hours but the date of shucking was unknown. The results are shown in Table II.

The data obtained indicate that market samples of shucked oysters 2 days old having an initially low score (not above 140) increased materially in *B. coli* content in 2, 3 and 4 days of additional storage. In fact many of the samples had reached the maximum score (5,000) of the 1 to 1,000 dilution within 48 hours after their arrival in Chicago.

Because of the impossibility of securing accurate information as to the age of the samples after the time of shucking, it was decided to repeat the experiment, using living oysters and shucking them in the laboratory. These scores are shown in Table III. The carefully and freshly shucked oysters in Series 3, covering 8 samples, examined in October, had a low *B. coli* content as indicated by a score of 50 or less in all but one of the samples. The number of *B. coli* slowly increased in this series during storage at 5° to 8° C. for a period of 48 hours. One sample, having an initially high score (140), showed a much more rapid increase in the number of *B. coli* during this period. On the 3rd day of storage 50 per cent of the 8 samples showed a decided increase in *B. coli* score. On the 4th day 100 per cent of the samples had a high score. The

TABLE II

B. COLI SCORE OF MARKET SHUCKED OYSTERS HELD IN STORAGE AT 5° TO 8° C.

Age in days after shucking / Sample No.	2	4	5	6
1-G	140	5000*	14000	500000*
2-G	0	410	13100	50000*
3-G	4	5000*	31100	410000
4-G	32	5000*	50000	410000
5-G	2	5000*	410	41000
6-G	140	5000*	140000	410000
8-G	14	410	5000	.....
11-G	32	1400	50000	.....
12-G	3	5000	41000	.....
13-G	5	3200	4100	.....
14-G	41	5000*	320000	.....
16-G	32	5000*	410000	.....
17-G	5	4100	41000	.....

* Maximum score with dilutions employed in test.

TABLE III

B. COLI SCORES OF SHUCKED OYSTERS HELD IN STORAGE AT 5° TO 8° C.

Sample number	Initial score	Score after storage classified by age in days										
		1	2	3	4	5	6	7	8	9	10	11
1-B	23	32	140	50	230	410	140	410	230	500*	500*	500*
2-B	50	41	50	140	410	500*	500*	500*	500*	500*	500*	500*
3-B	5	32	41	50	230	410	500*	410	410	500*	500*	500*
4-B	41	50	50	230	230	410	320	410	410	500*	500*	410
5-B	32	32	50	230	410	500*	320	500*	500*	500*	500*	500*
6-B	32	50	41	230	410	140	500*	410	410	500*	500*	500*
7-B	140	230	500*	500*	500*	500*	500*	500*	...	...	...	...
8-B	23	50	41	41	230	410	320	140	...	...	...	...
Total score	346	517	913	1471	2650	3280	3100	3280	2460	3000	3000	2910
Percentage increase	...	49	164	296	666	848	796	848	1244	1539	1539	1490
Average B. coli score	43	65	113	184	331	410	387	410	410	500	500	485
Closest standard score	41	50	140	140	320	410	410	410	410	500	500	500

* Maximum score with dilutions employed in test.

increase in *B. coli* may better be visualized from the percentage increase of the total scores of the 8 samples, which was 39 per cent in 1 day, 100 per cent in 2 days, 371 per cent in 3 days and 943 per cent in 4 days. The sample having an initially high score (140) showed a percentage increase of 257 in 2 days.

In these experiments the increase of *B. coli* was much more rapid than in Series 1. It is believed that the explanation lies in the season of the year in which the oysters were gathered. Series 2 was examined early in October and Series 1 late in December. The earlier series was collected from relatively warm waters and contained vigorously growing organisms, whereas in the later series collected in mid-winter, it is believed that the organisms had become attenuated and consequently grew less vigorously.

A series of tests was now made on living shell oysters. The batch tested had been shipped from the eastern coast 11 days prior to the date of the first test. The scores were made on the liquor contained in one oyster, sterile 2 per cent salt solution being added to those oysters which did not contain sufficient liquor for the test (Table IV). Assuming the initial *B. coli* contamination of this batch of oysters to be fairly uniform, it was evident that *B. coli* did not increase at all in the living shell oysters. The *B. coli* scores in this series remained under 50 over a period of 83 days from the date of shipping and in fact, began to decrease after the 28th day.

TABLE IV

B. COLI SCORE OF UNCHLORINATED SHELL OYSTERS HELD IN STORAGE AT 5° TO 8° C.

Age—days	Sample No.	B. Coli score
11	1–C	50
12	2–C	41
13	3–C	14
14	4–C	14
17	5–C	0
18	6–C	23
20	7–C	5
21	8–C	23
25	9–C	0
26	10–C	2
27	11–C	0
28	12–C	5
29	13–C	41
30	14–C	1
32	15–C	0
35	16–C	2
40	17–C	0
41	18–C	4
43	19–C	2
44	20–C	0
45	21–C	5
48	22–C	0
49	23–C	15
53	24–C	2
54	25–C	5
55	26–C	0
60	27–C	5
68	28–C	0
69	29–C	0
71	30–C	0
73	31–C	0
78	32–C	0
78	33–C	0
79	34–C	0
79	35–C	0
80	36–C	0
80	37–C	0
81	38–C	0
81	39–C	0
83	40–C	1
83	41–C	0
84	42–C	0
84	43–C	0
85	44–C	1
85	45–C	2
86	46–C	0
86	47–C	0
87	48–C	0
87	49–C	0
88	50–C	0
88	51–C	0
90	52–C	0
90	53–C	0

Because of the difference in the scores obtained it seems desirable that separate *B. coli* standards be set for judging the sanitary quality of shucked and shell stock. A standard applicable to shell oysters at the sea coast would be equally applicable to shell oysters in distant mar-

TABLE V

B. COLI SCORES OF SHUCKED OYSTERS—SEASON 1924–1925

Month	Total	0–32		0–41		0–50		0–140		0–230		0–320		0–410		0–500	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sept.	19	2	10.5	2	10.5	2	10.5	3	16	4	21	5	25	5	25	19	100
Oct.	48	8	17	8	17	9	19	12	25	18	37.5	22	46	25	52	48	100
Nov.	5	3	60	3	60	3	60	5	100	5	100	5	100	5	100	5	100
Dec.	202	71	35	79	39	97	48	112	55	129	63.8	140	69	159	78.7	202	100
Jan.	251	158	63	168	67	183	73	194	77	209	83	221	88	233	93	251	100
Feb.	120	104	87	106	88	112	93	115	96	118	98	118	98	119	99	120	100
March	149	83	56	96	64	108	72	121	81	128	86	131	88	136	91	149	100
April	62	39	62	43	69	45	73	50	81	56	90	58	93	62	100	62	100
	856	468	55	505	57	559	65	612	71	667	78	700	82	744	87	856	100

B. COLI SCORES OF SHELL OYSTERS—SEASON 1924–1925

Month	Total	0–32		0–41		0–50		0–140		0–230		0–320		0–410		0–500	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Dec.	150	142	94.5	143	95	144	96	146	97	147	98	148	99	149	99.5	150	100
Jan.	28	27	96	27	96	28	100	28	100	28	100	28	100	28	100	28	100
Feb.	16	15	94	16	100	16	100	16	100	16	100	16	100	16	100	16	100
March	9	9	100	9	100	9	100	9	100	9	100	9	100	9	100	9	100
April	2	2	100	2	100	2	100	2	100	2	100	2	100	2	100	2	100
	205	195	95	197	96	199	97	201	98	202	98.6	203	99	204	99.5	205	100

B. COLI SCORES OF HARD SHELL CLAMS—SEASON 1924–1925

Month	Total	0–32		0–41		0–50		0–140		0–230		0–320		0–410		0–500	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Jan.	20	20	100	20	100	20	100	20	100	20	100	20	100	20	100	20	100
Feb.	31	30	97	31	100	31	100	31	100	31	100	31	100	31	100	31	100
March	40	39	97.5	40	100	40	100	40	100	40	100	40	100	40	100	40	100
April	34	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100
May	7	6	85	6	85	6	85	7	100	7	100	7	100	7	100	7	100
June	7	5	71	5	71	5	71	6	85	6	85	6	85	6	85	7	100
July	16	10	62	11	69	12	75	14	87.5	14	87.5	14	87.5	15	94	16	100
August	9	6	66	6	66	7	77	7	77	7	77	8	88	8	88	9	100
	164	150	91	153	93	155	94.5	159	97	159	97	160	97.5	161	98	164	100

TABLE VI

B. COLI SCORES OF SHUCKED OYSTERS—SEASON 1925–1926

Month	Total	0–32		0–41		0–50		0–140		0–230		0–320		0–410		0–500	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sept.	69	16	23	19	27.5	24	36	32	46	42	61	48	69	57	83	69	100
Oct.	249	97	39	110	48	126	50	140	56	150	60	179	72	207	83	249	100
Nov.	249	168	67	182	73	197	79	211	85	220	88	227	91	236	95	249	100
Dec.	235	197	84	210	89	216	92	220	94	225	96	228	97	233	99	235	100
	802	478	60	521	65	563	70	603	75	637	79	682	85	733	91	802	100

B. COLI SCORES OF SHELL OYSTERS—SEASON 1925–1926

Month	Total	0–32		0–41		0–50		0–140		0–230		0–320		0–410		0–500	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sept.	12	7	58	7	58	8	66	8	66	9	75	10	83	10	83	12	100
Oct.	20	13	65	14	70	14	70	15	75	17	85	20	100	20	100	20	100
Nov.	10	10	100	10	100	10	100	10	100	10	100	10	100	10	100	10	100
Dec.	10	10	100	10	100	10	100	10	100	10	100	10	100	10	100	10	100
	52	40	77	41	79	42	81	43	83	46	88	50	96	50	96	52	100

B. COLI SCORES OF HARD SHELL CLAMS—SEASON 1925–1926

Month	Total	0–32		0–41		0–50		0–140		0–230		0–320		0–410		0–500	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sept.	8	5	62	6	75	6	75	7	87	7	87	7	87	7	87	8	100
Oct.	5	5	100	5	100	5	100	5	100	5	100	5	100	5	100	5	100
Nov.	6	6	100	6	100	6	100	6	100	6	100	6	100	6	100	6	100
Dec.	7	7	100	7	100	7	100	7	100	7	100	7	100	7	100	7	100
	26	23	88	24	92	24	92	25	96	25	96	25	96	25	96	26	100

kets. But a standard applicable to shucked oysters at the time of shucking seems unreasonable for the shucked product in far inland markets; moreover, because *B. coli* increase in shucked oysters, a *B. coli* standard applicable to shucked oysters as they arrive in Illinois, at an age of not to exceed 48 hours, probably would not be applicable to shucked oysters in the general retail market at large several days later.

In an effort to select reasonable stand-

ards for the Illinois market, all the routine shellfish samples collected by the Chicago Health Department in the season of 1924–25, and also the routine samples collected in the 1925–26 season up to January 1, 1926, were classified according to *B. coli* score for convenience in study. The results are shown in Tables V and VI.

Table V shows that 71 per cent of the shucked oyster shipments received in the season of 1924–25 would have passed a score of 140 and that in the months exclusive of September and October a higher percentage would have passed the same standard. Ninety-seven per cent of shell oysters delivered to the Chicago market in the season of 1924–25, from December 1 to April 30, would have passed a score of 50; and 100 per cent of hard shell clams would have passed a score of 50 in the same period. The *B. coli* scores of shucked oysters thus far in the 1925–26 season as given in Table VI show marked improvement over the corresponding period of last year.

FACTORS TO BE CONSIDERED

In arriving at a recommendation the following were considered:

Experience seems to indicate that the period of greatest danger from contaminated oysters is in the months of September and October and these are the months of highest *B. coli* scores in the Illinois market.

The fact that *B. coli* multiply in shucked oysters in transit at proper low temperatures seems to justify, for this type of product, a less rigorous *B. coli* standard in consuming states far from the point of production and shucking than at or near the source.

The findings in living shell oysters, however, do not justify a less rigorous *B. coli* standard in markets at a distance from the source of supply.

STANDARDS RECOMMENDED

In view of these facts and the experimental findings cited, it seemed not unreasonable to recommend as a tentative standard, a *B. coli* score of not to exceed 140 for shucked oysters and a standard of not to exceed 50 for shell oysters and hard shell clams sold in the Illinois market, and accordingly this was done. It is recognized that these standards will be most difficult to meet in the months of September and October, but the September market for oysters in Illinois is small and therefore a bacterial standard which would exclude the high percentage of unsafe shipments in that month would cause relatively little injury to the industry. It is believed that the majority of the October shipments can be made to comply with the proposed standards if necessary preparations for compliance are put into effect by the industry.

SUMMARY

Shucked oysters held in storage at 5° to 8° C. show a definite increase in *B. coli* content as determined by the Standard Methods of the American Public Health Association for scoring shellfish.

The percentage increase in *B. coli* score of one lot at 5° to 8° C. was 458 per cent in 12 days; and of another lot was 1,490 per cent in 11 days.

Shucked oysters gathered in the early part of the season and stored at 5° to 8° C., increased more rapidly in *B. coli* content than oysters gathered in midwinter and stored under similar conditions. Freshly shucked oysters in storage at 5° to 8° C. in October maintained an average *B. coli* score of not exceeding 140 for 3 days after shucking. Freshly shucked oysters in storage at 5° to 8° C. in December maintained an average *B. coli* score of not exceeding 140 for 13 days after shucking.

Living shell oysters did not increase in *B. coli* content under dry storage conditions at 5° to 8° C. from the 11th to the 83rd day after shipment. In fact after the 28th day a consistent decrease was noted and after the 60th day the tests for *B. coli* were usually negative.

A study of 856 routine samples of shucked oysters received in the Chicago

market during the season of 1924–25, shows that 71 per cent would have passed a *B. coli* score of 140.

A study of 205 routine samples of shell oysters collected in Chicago market during the season of 1924–25, shows that 97 per cent would have passed a *B. coli* score of 50 and 100 per cent of 164 samples of shell clams would have passed the same score.

A study of 802 routine samples of shucked oysters collected in the Chicago market during the first part of the season of 1925–26 shows a decided improvement in the sanitary quality of this product over that of the corresponding period of the previous season.

On the basis of these data and laboratory findings, a tentative *B. coli* score of not to exceed 140 for shucked oysters and a *B. coli* score of not to exceed 50 for shell oysters and hard shell clams were recommended as official standards for the Illinois market.

It was recommended that the standard for shell stock be applied under all practical market conditions, but that the standard for shucked oysters be applied at the first point of delivery within the state and be regarded as probably not reasonably applicable to oysters in the general retail market.

It was further recommended that a series of not less than three successive bacterial samples be required as a basis for action by enforcing agencies against the product of a given dealer or shipper, and that a single bacterial sample be regarded as insufficient ground unless supported by other sanitary considerations.

THE PREPARATION OF HEALTH DEPARTMENT BULLETINS

IRA V. HISCOCK, FELLOW A.P.H.A.
Assistant Professor of Public Health, Yale School of Medicine

THE USE of periodic health bulletins is becoming increasingly popular as a means of imparting information concerning health department activities and new developments in the public health field. Health departments of more than 30 states and 50 cities now publish bulletins regularly, either weekly or monthly, in addition to those issued by many voluntary agencies.

Among various classifications of health bulletins, one by a well known authority on publicity and health education methods is particularly interesting and to the point. According to this writer, a few of the bulletins are sufficiently attractive and so full of interesting material that their arrival is a real event. A second group of bulletins contains a nugget every month or two and is never neglected. A few bulletins are leafed through as a doubtful duty, while others usually slide directly into the waste basket. This classification is doubtless employed by many health and social workers although individual reactions differ widely according to personal or professional interests.

Factors of importance in the preparation of effective printed matter may well be borne in mind in the making of bulletins. It is obviously essential at the outset to know who receives the bulletin and may read the stories. The majority of bulletins are designed primarily to keep professional groups and community leaders in touch with current local public health problems.

In Edward Bok's *A Man from Maine* we read that when Mr. Cyrus H. K. Curtis was questioned as to the secret of

a good advertisement, he replied: "You have to start with the fact that nobody is interested in your business or what you have to say about it." In order to gain such a person's interest or excite his curiosity as to what you have to say or sell, "you must first realize that fact and project yourself into his position and mental attitude. . . . You have to take his position toward you, not your position toward him, and write to him, clearly, briefly, and readably from his angle." In preparing stories for health bulletins it is important to bear these suggestions in mind, and to avoid unfamiliar scientific words and long sentences. Sentences should rarely be longer than eight to ten words. Unless a bulletin is attractive and readable, it will not accomplish its desired purpose, regardless of how carefully the stories have been written. In a recent paper on appropriate "Typographical Style in Public Health Printing,"[1] Mr. Douglas McMurtrie well said that "No publicity efforts are worth spending money on unless they are effective."

One of the most important steps toward the preparation of an attractive bulletin is to secure a reliable printer. In making this statement it is recognized that there are certain instances in which the printing work of the department, for the bulletin at least, has been handled on a contract basis by the same printer for many years and it is not possible or practical to make an immediate change. In such cases much can often be done by the health officer or his assistant toward improving the appearance of an unattractive bulletin by a study of methods and by careful supervision of the manner in which stories, tables, and graphs are set up, spaces allowed, and type used.

As Mr. Routzahn has said,[2] the health worker could and should learn enough about printing to have a fair idea as to whether or not he is getting out a reasonably good piece of printed matter. Every health worker who feels that he must "leave it to the printer," should read one of the small volumes by Sherbow on *Making Type Work*, or *Effective Type Used for Advertising*.* The results should be better team play between the health worker and the printer and more readers for the bulletin.

It is important to remember that legibility is dependent principally on the length of line in relation to type used and the space between lines. With the reservation that there may be exceptions, McMurtrie advises that 10 point be set not wider than 4 inches; 8 point not wider than 3 inches; and 6 point not wider than 2½ inches.

The choice of type is obviously an important question but one which cannot be discussed in detail here other than to say that for the average bulletin editor it is best to stick to a few standard faces on which there is no possibility of going wrong. According to different experts consulted, original Caslon, or one of the many types designated as Old Style, are preferable. Avoid Cheltenham. It is not advisable to use fancy types. Some of the bulletin covers have as many as 4 or 5 different kinds of type. It is good practice to choose one series of type and use it throughout a pamphlet or bulletin. Careful consideration should also be given to the determination of the best size of type.

Many of the editors of bulletins do not give sufficient attention to proper margins for effectiveness. Margins should be graduated, with the narrowest margin to the binding edge of the bulletin. The margin to the top should be a little greater, that to the outside still wider, with the largest allowance at the bottom of the page. The use of rules is frequently helpful, particularly a combination of a light line and one about three times as heavy running parallel to it. Very heavy or fancy rules are seldom adapted for bulletin use.

Care in choice of paper should be

---

* See also the Publicity Methods Reading List published by the Russell Sage Foundation, New York, 1924.

mentioned. The most attractive papers are those without a shiny finish. Coated paper is distressing and is used only because it takes half tones easily. If this must be used, dull coated paper is preferable, but if there are no half tones, coated paper should not be used.

It is believed that more attention may profitably be given to cover designs. Many bulletins have been materially improved by having competent artists design covers to be used throughout the year or from year to year, sometimes with panels for the insertion of photographs. If photographs are not available or desired, a list of contents, or a few words emphasizing some outstanding idea might be used in a box in the center or lower half of the cover.

As is to be expected, the bulletin is a much more important institution in the larger cities than it is in the smaller ones, where in many cases it is little more than a monthly report of the vital statistics and morbidity. Doubtless many cities would extend the scope of their bulletins but for the cost entailed. In this connection, consideration may well be given to a plan whereby the central office of the American Public Health Association would supply, at a moderate cost, bulletin material for local use.

Several of the most valuable bulletins contain articles which are usually simple, direct and practical. Frequently these are illustrated by photographs, and if these pictures are good, they add interest to the stories. Cartoons are also used effectively in a few bulletins, where the front and back pages are given to sketches supplied by a health cartoon service or a staff artist.

Finally, the general use of bulletins seems to be still in a somewhat experimental stage, with each community a laboratory for research. A large proportion of the cities and states exchange publications with those of other departments. This enables health officials to become familiar with the progress of health work and publicity methods in different sections of the country. The Committee on Administrative Practice of the American Public Health Association recognizes the value of health bulletins. This is shown by the fact that out of a total of 20 points allowed for popular health instruction in the new Appraisal Form for city health work, 2 points are credited if weekly health bulletins are issued, and 5 additional points are credited if monthly health bulletins are issued.

In view of the possibilities for education through bulletins, and of the cosmopolitan list of individuals and organizations included on the majority of mailing lists, it is obviously essential that they be made attractive in typography and subject content. This requires much care in preparation and continued study of publicity methods. That considerable progress has been made in this respect is shown by a comparison of the bulletins now published with those of 3 years ago when the problem was first discussed at a meeting of the American Public Health Association.

REFERENCES

1. *Nation's Health*, 6, 8 (Aug.), 1924.
2. *A.J.P.H.*, 13, 11:985 (Nov.), 1923.

CANCER MORTALITY*

HOWARD WHIPPLE GREEN

Director Bureau Statistics and Research, Cleveland Health Council, Cleveland, O.

A CAREFUL STUDY of the recorded death rates due to cancer in various parts of the United States during 1910 and 1920 is well worth while at this time. Much consideration has heretofore been given to the cancer mortality in certain selected sections of the United States, and more particularly in England and other European countries.

The deaths due to cancer in 1920 in the 34 states and the District of Columbia comprising the U. S. Death Registration Area amounted to 71,756. This death registration area included 58 per cent of the land area and 82 per cent of the entire population of the United States.

Cancer like some other diseases causes few deaths among young people. The magnitude of the death rate, however, increases rapidly as the age of the people under consideration increases. Over 11 per cent of the deaths of persons 45 years and over are reported as due to cancer.

Because of the large variation in the death rates of the various age groups, the age composition of the population must be taken into consideration when comparing cancer death rates in different cities or states. This fact is taken into account when adjusted death rates are compared. The adjusted death rate from cancer per 100,000 population in 1920 varied in the 34 registration states from 98 for Massachusetts to 46 for South Carolina, and in the 12 largest cities from 132 for San Francisco to 89 for Detroit. The cancer death rate seems to be higher in the cities than in the states and higher in the northern states than in the southern states. Those states in which the adjusted death rate was highest are Massachusetts, with 98 per 100,000 population, Connecticut, New York, Minnesota, Rhode Island, Illinois, California, New Jersey, Maryland, to Vermont with 86; while those in which the rate was lowest are Kansas with 63; Louisiana, Montana, Virginia, Kentucky, Florida, Tennessee, North Carolina, Mississippi, to South Carolina with 46.

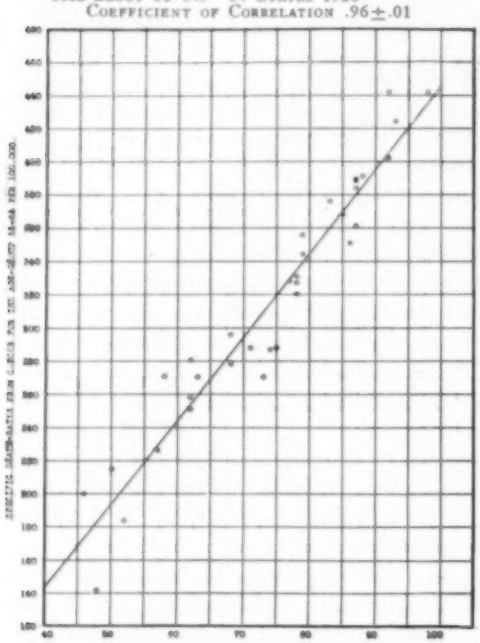
In order to make comparisons between certain cities or between certain portions of the population it becomes necessary to use specific death rates as it is impossible in many cases to obtain sufficient data from which to calculate the adjusted death rates. The specific death rates for the age group 55–64 years were selected for this purpose. These death rates are shown to vary as the adjusted death rates.

The correlation between the specific death rates for the age group 55–64 years and the adjusted death rates is very high. The coefficient of correlation is $.96 \pm .01$ for the 34 states and $.91 \pm .03$ for the 12 cities of 1920 and $.88 \pm .03$ for the 20 states of 1910. The coefficient of correlation between the adjusted death rates and the specific death rates for the age group 65–74 years is also high, being $.94 \pm .01$ for the 34 states and $.80 \pm .07$ for the 12 cities of 1920.

The specific death rate in one age group varies as that in an adjacent age group. The coefficients of correlation being $.89 \pm .02$ between the specific death rates for the age group 55–64 and the age group 65–74 for the 34 states and $.72 \pm .09$ for the 12 cities of 1920. In

*Read before the Vital Statistics Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 21, 1925.

COMPARISON OF THE ADJUSTED DEATH-RATES FROM CANCER WITH THE SPECIFIC DEATH-RATES FOR THE AGE-GROUP 55–64. 34 STATES 1920
COEFFICIENT OF CORRELATION .96±.01



ADJUSTED DEATH-RATES FROM CANCER PER 100,000

The chart shows graphically that a very definite relation exists between the adjusted death rate from cancer and the specific death rate from cancer for a single age group.

the case of the specific death rates for the age group 50–59 and the age group 60–69 the coefficient of correlation is .69 ± .04 for the 66 cities of 1920.

Because of these facts it is possible to rate 66 of the largest cities in the United States in reference to cancer mortality. These cities, arranged in order of the magnitude of the specific death rates from cancer in the 60–69 year age group, shows Albany, N. Y. with 856 per 100,000, as the highest, and San Francisco, Omaha, Hartford, New Haven, Scranton, Cambridge, Jersey City, Bridgeport following, to Paterson, N. J., with 704 per 100,000 population, and Houston, Texas, with 385 as the lowest, with Memphis, Akron, New Bedford, Lowell, Toledo, Grand Rapids, Trenton, Richmond and Atlanta with 456 per 100,000 as the low ones. Considerable variation exists in this rate. Neither latitude nor longitude shows any effect in the order of the arrangement of these cities.

Comparisons of the white and colored population in 11 states and 4 cities show the northern states high in the colored adjusted death rates, as well as in the white, and the southern states low in both. The coefficient of correlation for the 11 states for which the information is available is .95 ± .02 which is very high. The magnitude of the cancer death rate in these 11 states for the white people varies in the same manner as that for the colored people from which it may be concluded that the same forces act equally on the two races.

MORTALITY AMONG FOREIGN BORN

There are considerable differences between the cancer mortality rates for the various foreign born groups in the several states and cities. For those born in Ireland and Germany the cancer death rate seems to be high while for those born in Italy it is much lower—about one-half as high. It was desired to determine whether or not there might be some inherent conditions in a place which would cause the cancer mortality to retain from year to year a certain fixed position relative to the median of a group of places. To this end a coefficient of correlation was calculated for the 20 registration states of 1910 comparing the adjusted death rates in 1910 with those in 1920. The coefficient of correlation was found to be .83 ± .05 which strongly indicates that those states which had high cancer mortality in 1910 had high mortality in 1920 and those in which the cancer mortality was low in 1910 were in the same relative position 10 years later. The coefficient of correlation .79 ± .06, between the specific death rates for the age group 55–64 years in 1910 and in 1920 for these 20 states confirms this observation. The adjusted death rates in the 12 cities for 1910 hold a like relation to those for 1920.

The death rate for the female is, in general, much larger than that for the male. In some states the difference between males and females is very large while in others it is much smaller. In

TABLE I

A COMPARISON OF THE ADJUSTED CANCER DEATH RATES, NUMBER OF PHYSICIANS PER 100,000 POPULATION, POPULATION PER SQUARE MILE AND PERCENTAGE OF URBAN POPULATION FOR 34 STATES
1920

States	Adjusted Death Rate	Physicians			Physicians per 100,000 population	Persons per sq. mi.	Per cent of urban population
		Males	Females	Total			
Massachusetts	98	5,475	530	6,005	156	479	95
Connecticut	93	1,630	89	1,719	124	286	68
New York	92	15,972	923	16,895	163	218	83
Minnesota	92	2,690	151	2,841	119	30	44
Rhode Island	88	704	36	740	122	566	98
Illinois	87	9,990	749	10,739	166	116	68
California	87	6,006	808	6,814	199*	22	68
New Jersey	87	3,298	206	3,504	111	420	78
Maryland	87	2,253	100	2,353	162	146	60
Vermont	86	549	17	566	161	39	31
Maine	85	1,037	66	1,103	144	26	39
Pennsylvania	83	10,813	581	11,394	131	194	64
Oregon	79	1,129	113	1,242	159	8	50
New Hampshire	79	584	51	635	143	49	63
Michigan	78	4,227	239	4,466	122	64	41
Wisconsin	78	2,660	119	2,779	106	48	47
Ohio	78	7,528	374	7,902	137	141	64
Washington	77	1,809	177	1,986	146	20	55
Delaware	75	260	15	275	123	114	54
Nebraska	74	1,846	97	1,943	150	17	31
Indiana	73	4,116	164	4,280	146	81	51
Colorado	71	1,642	130	1,772	189*	9	48
Utah	68	481	22	503	112	6	48
Missouri	68	5,820	224	6,044	178*	50	47
Kansas	63	2,417	126	2,543	144	22	35
Louisiana	62	1,910	37	1,947	108	40	35
Montana	62	598	32	630	115	4	31
Virginia	62	2,357	43	2,400	104	57	29
Kentucky	58	2,999	78	3,077	127	60	26
Florida	57	1,379	52	1,431	148	18	37
Tennessee	52	3,178	54	3,232	138	56	26
North Carolina	50	2,109	29	2,138	84	52	19
Mississippi	48	1,642	15	1,657	92	39	13
South Carolina	46	1,342	17	1,359	81	55	18

* Omit from consideration.

certain age groups and in certain places the specific death rate for the male is equal to or higher than for the female. It was desired to determine whether a state in which the spread, *i.e.*, the difference between the male and female rate, was relatively great in 1910 would be in the same relative position in 1920. A study of this, however, indicated that there was little or no correlation.

Having fixed the fact that some places constantly have a cancer mortality above the average while others are below the average, it is possible next to endeavor to suggest some reasons why these differences may exist. Cancer mortality being higher in the cities than in the states, it might well be thought that the magnitude of the cancer mortality depends upon the density of the population. To this end a coefficient of correlation of $.52 \pm .08$ was calculated between the adjusted death rate and the density of population for the 34 states of 1920, and of $.55 \pm .08$ between the specific death rate for the age group 55–64 and the density of population.

A coefficient of correlation of $.82 \pm .04$ was found between the adjusted death rate and percentage of urban population for the 34 states in 1920.

These coefficients of correlation, while not high, are significant and it may be stated that the cancer mortality is higher in the more densely populated areas and lower in the less densely populated areas or that it is higher in the states where the population is largely urban and lower in those where it is largely rural. Several reasons for the cancer death rate varying

with the density of the population may be advanced.

Table I shows the number of physicians per 100,000 population in each of the 34 states and 12 cities of 1920. Three states should be excluded from consideration because of exceptional circumstances causing them to be incomparable; these states are California, on account of the peculiar composition of the population; Missouri, because of its diploma mills and lax registration laws; and Colorado, because of the extraordinary number of physicians there on account of the favorable climate for patients suffering from tuberculosis. For the remaining 31 states a coefficient of correlation of $.74 \pm .05$ was found between the adjusted death rate and physicians per 100,000 population.

These coefficients of correlation are extremely important as they indicate that in the places where the physicians are most available the cancer mortality is highest and where least available the cancer mortality is lowest. The relation of the density of the population to the number of physicians per 100,000 population, the quality of those physicians and their availability to diagnose correctly the cause of death entered on the death certificate is without a doubt important. The unsatisfactory correlation in the case of the cities may perhaps be explained by the fact that there are sufficient physicians in each of the cities available for correctly determining the cause of death.

CONCLUSIONS

All mortality rates are based upon reported causes of death. The accuracy of a cancer death rate is dependent upon the accuracy of the reports of the individual deaths. A small and fairly constant number of deaths reported as due to cancer are actually due to some other cause. "Doctor Bashford, in an investigation on behalf of the Imperial Cancer Research Fund, reported on 9,488 deaths in hospitals in the year 1909 attributed to cancer which were checked by autopsies. Of these 8.0 per cent proved not to be cancer." Also, a large and varying number of deaths actually due to cancer are reported as due to other causes. Some few people die without having received medical attention, which accordingly results in a poor diagnosis of the cause of death. Other death certificates are signed by physicians not sufficiently acquainted with the case of the deceased. Religious prejudices, it is sad to state, influence the cause of death returned while the friends and relatives of the deceased often refuse, in certain sections, to acknowledge that the deceased had had cancer.

Cancer may occur at the same time as other disease of a fatal nature to which latter disease the cause of death may be ascribed. Death caused by "senility" or "ill-defined or unknown" causes were often reported in the past, thus decreasing the number of recorded cancer deaths. Cancer, even shortly before death occurs, is sometimes difficult to diagnose. Even in the largest and best equipped hospitals failure to diagnose cancer without autopsy is common. To the above quotation it might be added "but in the same period and at the same hospitals 1,801 other deaths, not attributed to cancer, were shown post-morten to be due to this disease. Thus in hospitals having every facility for correct diagnosis during life the number diagnosed as cancer, whether rightly or wrongly by clinical means, was only 90 per cent of the deaths actually due to this disease. For cancer of inaccessible parts the number of deaths determined by clinical examination was only 68 per cent of the true number." [1]

All of these elements vary from state to state, city to city, urban community to rural community and among people of different races, social conditions, religious prejudices and general intelligence. The availability of physicians, skilled physicians and hospitalization vary likewise. In the cities more medical attention is available, better medical attention is available, hospitalization is common, and post-mortem examinations are frequently made.

SUMMARY

The adjusted cancer death rate in 1920 varied from 98 in Massachusetts to 46 in South Carolina.

It was higher in the northern states than in the southern states.

The states were in the same relative position in 1910 as in 1920. The same forces were acting during each period.

The white rate varied as the colored rate. The same forces apply to both races.

The adjusted cancer death rate in 1920 varied from 132 in San Francisco to 89 in Detroit. It was higher in the cities than in the states.

In the case of the states the rates vary with the density of the population, with the percentage of urban population, and with the number of physicians per 100,000 population.

All mortality rates are based upon reported causes of death.

The magnitude of cancer death rate is dependent upon the number of deaths reported as due to cancer.

In places where the rates are highest medical attention is available, better medical attention is available, hospitalization is common, and post-mortem examinations are frequently made; thus a larger portion of the total number of deaths due to cancer are properly diagnosed and reported.

NOTE: Free use has been made of *Mortality Rates 1910–1920*, as well as other publications issued by the Bureau of the Census.

REFERENCE

1. *Lancet*, 11:694, 1909.

RUDYARD KIPLING ON PUBLIC HEALTH

LOUIS J. BRAGMAN, M.D.

Syracuse, N. Y.

INTO HIS TALES of romance and realism Rudyard Kipling has woven simple incidents that to the governmental authorities of England's tropical colonies were serious problems in the daily administration of public health service. Colonial rulers soon learned that their power in India lay not in the numbers but in the physical strength and endurance of their forces. Public health became an item in their administrative program. The struggles they encountered in inaugurating protective hygienic measures and their efforts in combating the tremendous mortality in many instances gave Kipling a background for his vivid stories of India. Neither story-teller nor ruler labeled these activities. But in their simple language, Kipling lets his Colonial soldiers and native heroes tell about the practices of hygiene and sanitation and the fight against communicable diseases.

"We have no smallpox or disease here," writes a native soldier of India in "A Trooper of Horses" who is on duty in a foreign land. "The doctors are strict and refuse is burned by the sweepers. It is said that there is no physician like fire. He leaves nothing to the flies. It is said that flies produce sickness, especially when they are allowed to sit on the nostrils and the corners of the eyes of children or to fall in their milk-pots." The revelation of simple cleanliness was so inspiring that he was almost incredulous of the results, but unknowingly he was teaching as well as being taught some of the fundamentals of sanitation.

England did not have an easy time winning her Indian colonists over to the practice of vaccination. They were superstitious and feared harm would come to them if they submitted to the treatment of the "Mahratta state-

educated vaccinator, with lancets, lymph and an officially registered calf," who was sent to vaccinate them. It is in "The Tomb of His Ancestors" that Kipling so graphically and vividly depicts the eternal opposition that confronted England in her effort to introduce public health measures. The people were apprehensive and, according to the story of a native, they rebelled against the prophylactic measure:

"One came to us in the name of the Government with little ghost-knives and a magic calf, meaning to turn us into cattle by the cutting off of our arms."

It was only after the emphatic urgings of an Englishman, who wielded a mystic power over them that they were induced to submit. Rolling back his own sleeve to the armpit, he showed the scars of his vaccination marks and in a language they understood reasoned with them:

"You know the Smallpox who pits and scars your children so that they look like wasp-combs. It is an order of the Government that whoso is scratched on the arm with these little knives which I hold up is charmed against her. All Sahibs are thus charmed, and very many Hindoos. I myself will stay among you while this man scratches your arms with the knives. In three, or it may be in five or seven days, your arms will swell and itch and burn. That is the power of the Smallpox fighting in your base blood against the orders of the Government."

When this apostle of public health had finished his pleadings the people were reassured, and only a little later they considered it a great privilege to be vaccinated and the practice became almost universal.

How prevalent typhoid fever was among the natives and military forces stationed in India and to what extent the government officials took measures to stamp out this disease, Kipling has told us comparatively little. But that not a few had experienced its horror is revealed in "By Word of Mouth": "Nearly every household in India knows that doctors are very helpless in typhoid. The battle must be fought out between Death and the nurses minute by minute and degree by degree."

Evidently more concrete effort was made to check the spread of cholera. The Indian doctor in "At the End of the Passage" tells of the gruesome ravagings of this disease and the simple remedies he used but did not advocate for general practice: "About fifteen deaths a day don't incite a man to shoot anything but himself. And the worst of it is that the poor devils look at you as though you ought to save them. Lord knows, I've tried everything. My last attempt was empirical, but it pulled an old man through. He was brought to me apparently past hope, and I gave him gin and Worcester sauce with cayenne. It cured him; but I don't recommend it."

When this same doctor was asked how the cases ran generally he replied: "Very simple, indeed. Chlorodyne, opium pill, chlorodyne, collapse, nitre, bricks to the feet, and then the burning ghat. The last seems to be the only thing that stops the trouble. It's the black cholera, you know."

Another method of cure is described in "A Germ Destroyer": "He held that cholera was a germ that propagated itself as it flew through a muggy atmosphere; and stuck in the branches of trees like a wool flake. The germ can be made sterile, by 'Mellish's Own Invincible Fumigatory,' a heavy violet-black powder, the result of fifteen years' scientific investigation, Sir."

What could be simpler than the composition of this antiseptic and what could be more miraculous in effect according to this vender's description: "Nitrate of strontia, baryta, bone-meal. Thousand cubic feet smoke per inch. Not a germ could live, not a germ."

A picturesque interpretation of the plague in all its epidemiological aspects as seen through the eyes of Nicholas Culpepper, physician-astrologer, is given in "A Doctor of Medicine."

In Asia and Africa the Delhi sore or boil is epidemic and is caused by a protozoan parasite. It starts with a papule and becomes successively a tubercle, a scab and finally a circumscribed ulcer. How hideous it makes its victim is described in "William the Conqueror": "Her face was as white as bone and in the center of her forehead was a big silvery scar about the size of a shilling—the mark of a Delhi sore, which is the same as a 'Bagdad date.' This comes from drinking bad water and slowly eats into the flesh till it is ripe enough to be burned out."

Kipling the poet as well as Kipling the short-story writer is a source of facts on public health activities and preventive medicine in India. In "Municipal" he treats humorously of sewage disposal. In "Gehazi" he turns to pathos and speaks of "the leper as white as snow." The dramatic poet finds a theme in the slow burrowing inroads of cancer in "A Death Bed." "Cholera Camp" tells of the most formidable enemy the army has to encounter; and the cause and the effect of the plague and "fever and fluxes" is told in rhyme in "The Spies' March," and "Natural Theology."

A study of these works of Kipling from the viewpoint of public health problems substantiates more or less that observation made by Osler in his essay, "Physic and Physicians as Depicted in Plato":

"So much of the daily life of a civilized community relates to problems of health and disease that the great writers of every age of necessity throw an important sidelight not only on the opinions of the people on these questions, but often on the condition of special knowledge in various branches."

BATS IN MALARIA CONTROL

There are few more attractive proposals in connection with public health measures than those for utilizing one living organism for the control or eradication of another which is harmful to man—harmful either from the point of view of propagation of disease or from that of economic loss. A measurably successful example is the control of mosquitoes by small fish; an unsuccessful one is seen in attempts to control the rat nuisance by means of the mongoose.

Dr. L. O. Howard, Consulting Entomologist to the United States Public Health Service tells us (*Public Health Reports*, July 30, 1920) that the knowledge of the fondness of bats for mosquitoes goes back to Pliny's day, but he concludes that evidence of their value in practical mosquito control is too scanty to warrant the expenditure of funds for bat roosts in the expectation that the bats will serve a useful purpose in diminishing or eliminating mosquitoes.

Since Dr. Howard's paper was published a few years ago the subject has been restudied. Dr. Edward W. Nelson, Chief of the Bureau of Biological Survey (U. S. Department of Agriculture, *Department Bulletin No. 139*) reports that on the basis of his personal experience bats, even when extremely abundant, appear to have no influence on the prevalence of mosquitoes; indeed, in one location mosquitoes were so plentiful as to cause great annoyance when the investigators sought to collect specimens of bats.

Professor Grassi of Italy is reported as saying that the most malarial regions are precisely those where bats are most abundant. Dr. Nelson closes this phase of his investigation by saying:

"Mosquitoes have been found abundant in and about bat caves, and in the single case known where colonial bats have been artificially established there has been no appreciable diminution in the insect life or in the local abundance of mosquitoes. The assertions that bats will eradicate or even noticeably reduce the numbers of mosquitoes, and with them malaria, are shown by studies of their food and general life habits to be misleading and without foundation."

In the face of these statements from authorities whose opinions carry such great weight, we shall apparently have to dismiss any expectation that the fostering of bat propagation holds forth any encouragement in relation to mosquito control, and certainly it is unwise to utilize funds for this object which can be expended to advantage on well-tried methods.

A CLINIC ON MOTION PICTURES*

A CLINICAL SESSION of the Health Education and Publicity Section at the Annual Meeting of the Association at St. Louis was devoted to a showing and analysis of health films. The films were analyzed from the standpoint of scientific accuracy, educational value, and motion picture technic.

The discussion was introduced by James A. Tobey, chairman of the session:

Chairman—We hope to learn about the possibilities of motion pictures in public health education by showing a series of 4 short films, to be discussed at the end of each reel by Ray H. Everett, who is with the American Social Hygiene Association, New York City, and has been for many years interested in the production of health films, and Carlyle Ellis of New York City, who represents the motion picture industry. Mr. Ellis has made many of the recent successful health films shown by the large exhibitors in the country.

Mr. Everett will discuss each film from the angle of its scientific accuracy and its health interest. Mr. Ellis will discuss it as to technical detail of picture making, and incidentally, will tell us something about how pictures should be made.

(Showing of the film, "A Fortunate Accident," distributed by the American Society for Control of Cancer, New York City.)

Mr. Everett—This film is not as it was originally seen by the Health Films Committee of the National Health Council, having been shortened to a considerable extent, but as to scientific accuracy, I do not think it has been changed much. It was regarded then as scientifically accurate, and I think it still is, though its message seems to be a little more blurred than it was in the longer edition.

The point has been made that this is very helpful health propaganda, not only for the official health education forces, but also for the doctor who cannot do any advertising of his own. In the main, I think this would rate high from the standpoint of scientific accuracy.

Mr. Ellis—There are certain fundamentals of picture making which may concrete for us some critical standards by which we can judge the effectiveness of health films. There are certain human factors in audiences that must be taken into consideration in establishing such standards.

Here is an example: I run through a *National Geographic Magazine*, glancing at the pictures, and find one that interests me. It is arresting; it arouses my curiosity; and I begin to ask myself questions about it: Who are these people? To what country do they belong? What is this peculiar ceremony? Then I automatically begin to answer the questions myself and when I have answered all I can, I read the caption. Having gained new information I thereupon look back to the picture to register it and then I probably read the sub-title. You see, I am allowing the picture, not only to stimulate my curiosity, but to appease my vanity by stimulating my knowledge and my expression of my own experience and knowledge. This, it seems to me, is the ideal way to learn, and is the key to a sound motion picture technic.

Now, the old time movie of 15 years or so ago exactly reversed that process and so got off on the wrong foot. If you remember as far back as that, the original movie would start with the title which said, "Margaret, her curiosity aroused, takes a hammer and cracks open the cocoanut, and finds therein a white liquid called cocoanut milk." Thereupon the movie showed Margaret doing just what we were told she would do. The title fully anticipated the action and appeased all possible curiosity and so left you nothing but to see the picture confirming everything you knew before. Modern technic has reversed that. In the modern photoplay the opening title might say, "When Margaret was aroused she was absolutely fearless." Then we would have a close-up of Margaret being fearless, a close-up of the hammer; close-up of the cocoanut showing the liquid it contains, perhaps, poured out to make it look like liquid, and we read Margaret's lips saying in astonishment. "Milk." Then if it is necessary

* Abstract of the discussion at the Second Session of the Health Education and Publicity Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 22, 1925.

to confirm the diagnosis, we may have a title saying, "Milk of the Cocoanut." In other words, we take every possible advantage of the curiosity that is aroused by persons seeing things, and give the spectator every possible chance to answer as many as he can of the questions about that object, putting the burden on the scenes of the picture. We make the title merely confirmatory, adding perhaps some additional facts that the picture does not show but that are now of interest.

Even of health films that are being made to-day, I would say about 90 per cent are following the old technic. They are answering questions before they are asked, and therein losing an exceedingly valuable element in human psychology. The fundamental difference between an effective pedagogic method and a poor one is that the poor one answers questions before they are asked. In motion pictures—in visual education of all sorts—there is an opportunity to make the spectator ask questions and get him to answer as many as he can before the missing facts are supplied. This method gives an element of suspense; it gives an element of added emotion, and I think we will agree that it is better teaching. This, I think, may be visual education's biggest contribution to the school methods of to-morrow.

In the case of the picture that we have seen to-day, I cannot be very violent. It illustrates both of the methods that I mentioned in regard to titling and the place of titles in pictures, which, perhaps, is one of the most difficult and important elements in the making of motion pictures.

Mr. Everett confirms what I understand, that this picture was originally written for 2 reels and produced in 2 reels. In that version there was reason for the doctor being particularly interested in getting this case. There were motives and motivation all the way through that gave us something of a story. The story now is exceedingly vague and exceedingly light. It seems to have had all the dramatic roots of a story without the story. More carefully edited it would undoubtedly tell the story and still make very specifically all the points desired. My feeling is that here was an attempt to use a story, a drama, something to arouse emotion, something to put voltage into the message, and I find a very low voltage, because there is very little motive and exceedingly little human sympathy. I do not think any of us cared whether Mrs. Brown Jones had a cancer or not. We had not become acquainted with the lady, so she was not included in our sympathies and neither was the doctor. Therefore, the story form in this case has very little value, except as a frame for spoken titles that give us the cancer message.

Chairman—The next picture is technically known as a trailer, I believe, to be added to pictures shown in the regular motion picture houses.

(Showing of the film, "Inspect Your Engine," by the Ohio Public Health Association.)

Mr. Everett—For a short trailer this film puts over an exceptionally good message. It illustrates the value of periodic health examinations. The makers have indicated just enough of the type of examination to show what they mean. Of course, it might be helpful to add another caption or two, explaining that the health examination should be thorough, but I should rate the picture high for its health value.

Mr. Ellis—I like that little job, and I think we all did. It is an interesting example of the enormous value in capitalizing our interest in personality. Here is a real person, somebody more or less in our consciousness. We feel he is in actual existence, and there is a voltage to the message by reason of that.

In making stories for motion pictures or telling our health messages in stories the thing we try to do is to put voltage or emotion into it. We try to make the characters seem like human beings, to plant them in the consciousness and emotions of our audience, and, thereby, we obtain a vastly increased effectiveness.

This is just a simple little film. It looks obvious, but the treatment, and the succession of titling is good. I think we get maximum efficiency out of a little 200-foot subject and I am for it.

Chairman—The next picture entitled "A Two-Family Stork," is an animated cartoon and it ought to produce some critical discussion.

(Showing of the film, "A Two-Family Stork," produced by the New York State Department of Health.)

Mr. Everett—From the public health standpoint, the cartoon does not have the scientific accuracy that the regular pictures have. Quite often there will be some little thing done in one of these animated cartoons that is not in accordance with the highest scientific practices, or the highest purposes of public health education; nevertheless if it gets the lesson over the film may be considered fairly good. I think this film would get the lesson across.

Mr. Ellis—I suppose we could have spent this whole session in a discussion of the relative value of the various emotions as voltage for the health message.

You have heard a great deal recently of learning by shock, teaching by shock. Some of us have been shocked and found it very educational as far as learning is concerned. I saw a physiology picture the other day, supposed to be used in schools. There was a scene 5 feet long, showing the large intestine and in the middle of the scene it was blown up by air, so that we saw just where it lay and how. I do not think I will ever forget any detail of the large intestine, where it fits or anything about it, and it took only 5 seconds. I suppose that is learning by shock.

There are the other emotions: fear, which has been much discussed as a motive power, and which is very valuable in its place if used judiciously; that thing called human interest; and a rather delicate and difficult one called humor. I do not know if any of us have quite made up our minds as to the value of humor in teaching. I know the Committee on Publicity Methods has been examining the value of humor in money-raising campaigns and it did not work so well as some of the other emotions. It seems to me that humor in its use in visual education or otherwise is chiefly valuable as an "attention-getter." There is no question that it does stop you, and if directly on top of that attention you have acquired, you cash in with your message, it may be very valuable, but if you allow the humor to carry over, it will be a detriment.

Another point in favor of animated cartoons is the fact that it is very much easier to get them into the theaters. They have entertainment value and so the objectors forget sometimes that they are also educational. Animated cartoons do really teach a lesson, and if it is put over, the cartoon is a very useful form.

Chairman—Is there anyone who feels that the subject is one that should not be treated as it was treated?

Member—It seems to be done with the wrong thought. It is made as unattractive as possible in one case. The "Wises" are, perhaps, shown to be comfortable. But, there was an emphasis on unattractiveness which rather spoiled the moral of the story. I think some question as to the size of the baby at first was relevant to the issue. There is also, the handling of the baby by Mr. and Mrs. Wise, which is not, of course, according to the best modern practice.

Member—My criticism, after many years of work with mothers and with the general public in trying to make them recognize the sacredness and dignity of motherhood and the need of care for mothers is that we would be tearing down what we for years have tried to build up by showing this film. Moreover, the picture does not stress the main points, for instance, the matter of feeding the mother which has been left out almost entirely. It is not rich food, it is the quantity, and you are not telling them the right thing.

(Showing of the film, "The Hungry Dragon," produced by New York Tuberculosis and Health Association.)

Chairman—Will Dr. Lanza, Chairman of the Health Films Committee of the National Health Council, tell us what he thinks of this film?

A. J. Lanza, M.D.—I think this is a very unusual picture. From a technical viewpoint, I do not suppose it leaves anything to be desired. I find it difficult to make up my mind as to the value of that sort of a picture. It seems to me that there is only one way to find out and that is to show that picture to a class of children, boys and girls, and let them look at it, and then ask them to write down, in simple language, what they think of it, or what they get out of it. That is the only way we can tell.

I am reminded of the children's stories that we read in some of the magazines that betray a tremendous knowledge and insight into the child's character and have a very clever and very humorous effect, but are not written for children, and I think a good many of the finer points of children's so-called classics are only appreciated by adults.

There is the same danger in children's moving pictures. Frankly, I do not know what sort of message this one would convey to a group of children, 5 or 10 years of age. I think if you tried it and asked them about it you would get some quite remarkable answers. On the whole, I would say that, in construction, care and originality displayed in getting it up this film is a remarkably fine piece of work, but of its ultimate utility, I must confess, I cannot judge.

Mr. Everett—I felt I would like to recall to my memory that poem, "Backward, turn backward, O time in thy flight, Make me a child again, just for tonight," so that I could more adequately judge that picture. Also it made me think of *Alice in Wonderland*, and "The time has come, the Walrus said, to talk of many things." The use of symbolism in a picture is apt to result in a remarkable and in-

teresting subject, particularly to the older people who interpret that symbolism for themselves, but as to whether or not it is clear for a younger age group, I have the same question to raise as Dr. Lanza did. I think if Dr. Galdston, whose organization has made extensive use of the picture, would say a few words on this subject it would be most helpful.

Iago Galdston, M.D.—I do not want to do that. I am eager to get your reactions. The picture is an experiment—the first time marionettes have been used in a health subject to our knowledge—and we want to get an honest opinion on it. You perhaps would be interested to know that there was about two and one-half years work behind this picture.

We have had a difficult time in bringing health consciousness to the younger children. I use that expression "health consciousness" in a limited sense. We do not want to frighten or scare them, but we just want to bring them health consciousness—to bring onto their horizon of consciousness certain facts.

We have tried entertainers of various sorts; animated cartoons were not quite satisfactory. We thought we might have better results with marionettes in a puppet show. So about a year ago, we chose one for a public school performance in New York City. We invited the people in charge of visual education in New York City. We brought the principal and the teacher in on the session, and had a classroom or assembly hall full of children, ranging in age from 8 to 14 years. After one of the performances we asked each child to write a composition on it. It was remarkable the amount of solid material from the story part that the children obtained. But it cost a minimum of $35.00 per performance and it was very difficult to handle.

So we decided to try it in a movie and made this.

In regard to symbolism, one of the objections and difficulties, I believe, is overcome in this picture. When you get a little girl to appear in a paper dress of green material and call her "Spinach," it is very funny but I think it does violence to the mind of the child, for Mary has become "Little Spinach."

May I make this point clear: Many of those who criticise health lectures, posters, motion pictures and other activities in public health education, speak as if they expected these individual items to deliver the message in toto. You criticise it as though you expected the motion pictures to do the whole job—to provoke interest—to lead to action. That is asking entirely too much. This is just one little part of a scheme which plays upon numerous motives, uses many mechanisms, and if it dovetails with the rest it achieves its purpose. You must not expect from any picture the complete delivery of a complete message. All we want this picture to do is merely to show these children in a pleasant way, that there are such things as disease and health and that it is to their benefit to be healthy.

CONFERENCE COMMITTEE ON SCHOOL VENTILATION

An important step was taken on May 10 in the direction of clearing up the conflict which has arisen between hygienists on the one hand and ventilating engineers on the other in regard to the problems of school ventilation. A general conference committee on school ventilation was organized to include the committee on ventilation standards of the American Society of Heating and Ventilating Engineers (W. H. Carrier, chairman), the New York State Commission on Ventilation (C.-E. A. Winslow, chairman), the committee on ventilation of the Public Health Engineering Section of the American Public Health Association (C. M. Baker, chairman), and the joint committee on school hygiene of the National Education Association and the American Medical Association (T. D. Wood, chairman). A central conference committee on school ventilation to serve as an executive committee for the larger group will be organized and a serious effort will be made to arrive at an agreement in regard to objects and methods of school ventilation and where agreement is not immediately possible to determine what studies should be made in order to solve the problems at issue.

SELLING PUBLIC HEALTH

RALPH G. BEACHLEY, M.D.

President, South Carolina Public Health Association, Spartanburg, S. C.

MODERN public health methods and principles are constantly changing. This has been especially true during the past 5 years when they have assumed a larger aspect of unlimited possibilities for individual and community health promotion. The public health official has been too prone to take for granted the fact that the public would support the work regardless of what attitude he assumed and that the only requirement was to carry out the routine duties of the office irrespective of the contacts made by him or members of his staff.

Many good pieces of public health work have failed because the public has not been made intelligent about the duties, the functions and the accomplishments of the undertaking. It is no doubt true that this feature of the work can be overdone by the newness of the whole-time county health unit, but too much importance cannot be given to the selling side of public health work. Appropriating bodies are too apt to be guided in scaling their appropriations, not according to the actual amount of public health work done, but by their own personal attitude toward it, which in a large majority of cases reflects the opinion of others. It for only that reason the so-called salesmanship principles are necessary during the first few years of the newly organied health department. Perhaps a department that has been functioning for several years does not need to expend so much energy in this direction.

How can an intangible thing like public health be sold? No better proposition was ever offered to the public than modern preventive medicine, from the standpoint of the so-called whole time county health unit. The time is not far distant when the sickness and death rates in a community will be determined almost in direct proportion to the amount expended for public health activities.

IMMUNIZATION AGAINST DISEASE

With the possibilities for protecting a community through extensive immunization against such diseases as typhoid fever and diphtheria, there is a great future certainly for community health protection. When a community, as a whole, realizes that such diseases and many more can be almost wiped out by modern public health methods, support will not be lacking. Already some communities have adopted a campaign and are spending large sums to eliminate diphtheria within 5 years by the use of the free distribution of toxin-antitoxin. Public health has actually been sold to these communities. In the final analysis, mothers and fathers are the same the world over, and when it has been conclusively demonstrated that their children can be protected from such diseases as diphtheria and scarlet fever by proper public health measures, there will be unlimited support for the health official.

The field of infant hygiene is another phase of public health of which the public universally will be appreciative in a few more years. More mothers will take advantage of the well baby conferences where they are taught how to keep the infant well and to give it proper care. The prominence of women in governmental bureaus is certain to give greater momentum to this work.

In the control of tuberculosis no better instance can be cited than that of the Framingham, Massachusetts, health demonstration, in which the Metropolitan Life Insurance Company participated. True, a large amount of money was spent in this undertaking but the death rate and sickness were so reduced, especially the morbidity and mortality from tuberculosis, that when the demonstration was completed at the end of 5 years, the local government continued the work. This is another instance of completely selling a public health program.

PUBLIC HEALTH OFFICIALS AND LOCAL PHYSICIANS

While the public health director may be the guiding factor in any public health undertaking, of almost equal importance is the public health nurse. She is the one who enters the home, and frequently it is upon her that the success or failure of the work depends. It has often been said that the first requisite of the trained nurse is that she be kind and sympathetic. In the selection of a nurse for this work no other quality is so important as the ability to understand and deal with people who have sickness in their home.

Too often the health officer is inclined to ignore the importance of the medical profession in a community in relation to its work. No public health activity will ever succeed, to any great extent, without the support of the local medical profession. Too much stress cannot be placed upon contact of the health officer and public health nurses with the doctors in the community. Often health officers and nurses complain that doctors are not in sympathy with the work. In a great majority of instances this is due to lack of mutual understanding, and it can be overcome by using every method to disseminate proper information through the medical profession.

Probably no phase of public health requires as little salesmanship as sanitation. The value of enforcing proper sanitary methods in a community has been quite universally appreciated and yet this phase cannot be ignored in the general education of the public in public health matters. That the building of the Panama Canal was possible only by controlling malaria and yellow fever through the modern public health methods is an indelible object lesson in sanitary control. This feat furnishes one of the most fascinating chapters in the world's history of modern preventive medicine.

The people, as a whole, are unfamiliar with medicine and medical terms, but they must be educated along these lines, if we are to gain their sentiment and support which is necessary to carry on the work successfully. This can be accomplished only by making the right contacts, by consistently disseminating correct information through the press and bulletins, and by brief talks to various groups of citizens. A newly organized health department with the most efficient personnel is soon doomed to failure if it does not have the constant support of the newspapers. Probably no other factor is so important in selling public health as a sympathetic newspaper, for it is chiefly through the press that public opinion is molded. It is certainly the most ideal way to inform the largest number of people of what has been, and is being accomplished.

When the public health official realizes the value of applying the same principles in selling his wares as the average business man uses, public health will go forward much more rapidly in the future than it has in the past.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

EDITORIAL COMMITTEE

MAZYCK P. RAVENEL, *Chairman* HOMER N. CALVER, *Managing Editor*

C. C. YOUNG, LOUIS I. DUBLIN, PH.D., E. R. HAYHURST, M.D., MERRILL E. CHAMPION, M.D., ABEL WOLMAN, C.E., LOUIS I. HARRIS, M.D., ARTHUR TOMALIN, JAMES A. TOBEY, LL.B., EVART G. ROUTZAHN, C.-E. A. WINSLOW, DR.P.H., WALTER S. FRISBIE

MENTAL HYGIENE [1]

IN THE JOY of mastering the contagious diseases which came through the work of Pasteur, we unquestionably have lost sight of some other things well worth our study. Among these, mental hygiene probably stands first. There is still a lack of teaching concerning it in our medical schools and a lack of knowledge of, as well as interest in, it among general practitioners. It has been turned over to the sociologists, most of whom are without medical training, to any great extent. However, there can be no question that there is not only a growing interest in mental hygiene, but a growing recognition of the fact that we can protect ourselves as well as the future by paying more attention to those unfortunates who have not inherited a normal mental and nervous make-up.

The estimate by the late Colonel Pearce Bailey, based on draft examinations, placed the number of mental defectives in the United States at approximately 700,000, the vast majority of whom are not under custodial care and not even recognized as being below normal. They come and go at will, occupy themselves as best they can or choose, marry and beget their kind without hindrance. As a nation, we do not seem to have learned the lesson taught us by such families as the Kallikaks and Jukes. If one thing has been shown more clearly than another, it is that our delinquents and criminals are recruited largely from people of defective mentality, people who are anti-social because of their inheritance. These people are almost always repeaters, and our law makers have not yet learned the futility of punishment based on fear for such people.

The Mental Hygiene Survey of Rhode Island emphasizes these points. A survey of those who come before the juvenile courts, who are in reformatories, county jails, houses of correction, state work houses, state prisons, and other institutions, shows that the large majority of prisoners are not fit to compete in the life of today. Not many actually insane people are found among these delinquents, but in many there is a physical basis for their delinquency. In one instance the same person had been arrested 57 times. The literature of the subject is filled with proofs that such people are arrested over and over again and that the punishments to which they are subjected do not in any way train them or deter them from future offenses, or help them in any way to avoid future ill conduct.

The survey of the schools in Rhode Island shows that here, as elsewhere, the outstanding problem of mental hygiene is that of the child who lacks normal

intelligence. If these defectives are recognized early and the individuals are given proper training and education, many of them will develop into law abiding citizens, who can support themselves and who will occupy a useful, if lowly, position in the community. When such children are treated as normal and expected to compete with those who are normal in class work, harm is done to normal as well as abnormal, and in addition the energies of the teachers are exhausted beyond reason. It is futile to attempt to teach these defectives subjects which they cannot understand. To put such children in a reformatory as punishment is equally wrong. "It is all a waste of time and effort, for no one has yet devised a way to make a pint bottle hold a quart."

Mentally defective persons who have not been early recognized as such and trained, and who have in consequence drifted into fixed habits of crime, must probably be cared for in penal institutions, an unwise and expensive expedient. Habits which become fixed in the mentally defective are hard to change. Trials, sentences, imprisonments and punishments do not teach them anything. Such persons should be recognized early in life, when training will fit them for their proper place in the community. As pointed out by Judge Levine of Cleveland, we are pursuing the same wrong course in the treatment of these unfortunate people that our forefathers did with those ill of bodily ailments. The victims of pestilences were formerly considered objects of divine wrath, and were punished physically to the extreme.

The treatment of the insane and mentally defective has advanced from the practices of a few years ago, but still leaves much to be desired. Prevention is what we need rather than treatment. Since mental defect is inherited in the vast majority of cases and can never be corrected, or in the ordinary sense of the term, cured, the treatment must be prevention. Early recognition, proper training and control of procreation are the measures which are indicated.

[1] Report of the Rhode Island Mental Hygiene Survey. Conducted under the auspices of The National Committee for Mental Hygiene, Inc., New York City. Survey directed by Samuel W. Hamilton, M.D. October-December, 1922.

THE CHALLENGE OF MEASLES

TOO MANY health officers, as we believe, are inclined to adopt an attitude of *non possumus* in regard to the control of measles; and we are glad to present Dr. Godfrey's article in this issue of the JOURNAL as an antidote to such a counsel of despair. We are inclined to go further than he does, however, and believe that even morbidity from measles can be and should be controlled.

It is quite true that measles generally escapes diagnosis until the most contagious coryzal stage of the disease has passed. It is therefore exceedingly difficult to prevent the second crop of cases which develop from an initial focus. It is possible, however, to keep the contacts of the primary case under systematic observation and to isolate them on the first sign of suspicious symptoms and thus diminish materially the third series of cases that would otherwise result. This type of administrative practice, which Hill has called concurrent epidemiology, is well worthy of the serious efforts of the health officer.

Above all, however, we must all agree that these efforts should be directed toward protecting infants and young children against the hazards of this disease. The Metropolitan Life statistics showed a measles death rate of 84 per 100,000 from 1 to 4 years, of 10 per 100,000 from 5 to 9 years and of 1 per 100,000 or

less thereafter. Every year, every month, for which contact with measles can be postponed is so much gained from the standpoint of fatality. In the course of a measles outbreak nurses should be definitely assigned to the special task of visiting every home where there is a young child, to give special instructions in regard to the dangers involved. We can sometimes isolate the well infant and young child from all comers more effectively than we can isolate the incipient case of measles from the rest of the community; and where known exposure has occurred the protection of young children by the use of convalescent serum or immune parental blood should be practiced wherever possible.

With diphtheria joining typhoid fever among the historic pestilences, measles is coming to stand next to pneumonia and tuberculosis among the communicable maladies. It presents a challenge to the health officer which he should meet with the best weapons at his disposal; and those weapons if vigorously and conscientiously used will not, we believe, be found ineffective.

NEW FACTS CONCERNING THE PARASITE OF MALARIA

THE TREATMENT of the late manifestations of syphilis by the injection of malarial parasites and the production of what might be called "induced malarial fever," seems to have obtained a firm footing through the remarkable success which has attended it. Incidentally we have learned a great deal about the malarial parasite and the effect of quinine upon it. The Plasmodium vivax is the parasite of election. The malignant type is extremely dangerous and the quartan is not satisfactory.

It was early noted that the induced attack was easily cured by the use of quinine, very much more so than is the case in practice where the cure of malaria by this means is often slow and uncertain, and relapses apt to occur. In the effort to discover the reason for this, Professor Yorke,[1] of the University of Liverpool, has carried out a long series of inoculations of old syphilitics by infected mosquitoes since it was thought possible that the passage through the mosquito had something to do with the difference in results noted. The malaria following the bites of infected mosquitoes showed no difference in this respect from that induced by injection of parasite containing blood. A short course of quinine, 30 grains for 3 consecutive days, definitely cured 40 per cent of all cases; in 57 per cent relapses occurred, usually between the fourth and eleventh month after, but in the great majority of these both the parasites and the fever disappeared spontaneously or was easily cured by an additional 3 day course of quinine.

A study of the factors which lead to relapses shows that the particular strain of parasite used for infecting the patients has no effect, and that the chief influence affecting relapse is individual to the patient. It seems evident that the great difference in resistance to treatment between artificially infected cases and those met with in practice in the tropics, lies in the fact that the former are all primary infections, while the latter are often of long standing or relapses. This explanation, however, remains to be proved by further work.

The specific effect of quinine both in treatment and in prevention has become so firmly fixed in the minds of medical men that one is startled at the results of attempts at prophylaxis by giving quinine 5 days before the infection, coincident with it, or for 8 days following. In no case was any preventive effect observed, no

action on the sporozoites was seen, and the conclusion is drawn that the drug has no true prophylactic action. When the quinine is continued for 10 days or more following the infective bite, fever does not develop.

This brings up a question which has been discussed before: In what way does quinine cure malaria? The true explanation seems to be that quinine administered when the blood contains numerous parasites destroys many of them directly or indirectly, probably the latter. Due to this destruction of the parasites, soluble antigen is set free, which stimulates the tissues of the body to the formation of immune substances, which in turn destroy the remaining parasites, resulting in cure. This theory involves the idea that quinine, however given, never completely destroys all of the parasites in the body, and that the body tissues are able, when properly stimulated, to produce sufficient antibodies to bring about this result. Considerable evidence has been accumulated to prove the correctness of this idea, and there are numerous analogous facts in respect to other diseases to support this view, particularly in some of the trypanosomiases.

These experiments have given us new light on the period of incubation in tertian malaria. It varies considerably, the first rise of temperature occurring from 9 to 22 days after the bite of the infected mosquito, while the malarial parasites appear in the peripheral blood in from 13 to 21 days. The first parasites to appear are almost invariably trophozoites. Gametocytes do not appear until 2 or 3 days later. Since only gametocytes can infect mosquitoes, very early cases appear to be not communicable.

1. *Lancet*, Feb. 27, 1926, p. 427.

MORTALITY FROM DIPHTHERIA DECREASING[1]

THE third annual summary of diphtheria mortality in the large cities of the United States deserves more than a passing mention. It has frequently been stated that while the use of diphtheria antitoxin has greatly lessened the mortality of the disease, the incidence of the disease has not shown any decided decrease. In addition to this every health officer knows that many cases of diphtheria are not treated promptly, and many times even where antitoxin is used, it comes too late to do much good. Every year sees the public becoming more and more educated, and there seems reason to believe that diphtheria antitoxin is being more and better employed.

Until 1920 but little improvement could be demonstrated in the mortality from diphtheria in the majority of cities. From 1910 to 1914 only 13 cities had rates which averaged under 10. In the periods from 1915 to 1919 and 1920 to 1924, only 18 cities had an average rate under 10, while in 1924, 37 cities, and in 1925, 49 cities, had rates under 10. Making the estimate according to the population of the 70 cities studied, 29,243,128 in 1923, and 31,049,595 in 1925, we find that the diphtheria death rate in the former year was 13.12 per 100,000 against 9.74 for 1925. In spite of an increase of practically 2 million in population, the actual deaths for diphtheria decreased more than 800 for these cities. Perhaps even more encouraging than this figure is the fact that 10 cities, all of considerable size, showed death rates under 4 per 100,000, while 8 cities, including several of the largest in the United States, have shown a continuous decline in diphtheria death rate by 5-year periods from 1890 to 1924.

Certainly we have reason to feel that progress is being made in the control of this disease. With the increase in the use of antitoxin meaning more cures, earlier cures, and a smaller number of foci of infection, and with an increase in the use of immunization, we certainly have reason to look forward to an increasingly rapid decline not only in number of deaths, but in the cases of diphtheria as well.

1. *Jour. A. M. A.*, Apr. 3, 1926, p. 1005.

ASSOCIATION NEWS

THE ASSOCIATION AT THE AMERICAN HEALTH CONGRESS

THE Community Health Organization Session was the high spot in the special meeting of the American Public Health Association held in Atlantic City last month. Indeed this session which was shared with the American Child Health Association, the Conference of State and Provincial Health Authorities of North America, and the National Organization for Public Health Nursing was, from a practical standpoint, one of the most valuable of the whole Congress.

It provided the first opportunity that public health workers have had to discuss the three plans for Community Health Organization that have been proposed in the last two years.

The papers presented by Dr. Farrand, Dr. Sundwall, Miss Dolfinger and Dr. Keene on the teaching of hygiene attracted a large and interested audience, composed largely of teachers of hygiene in colleges. This feature on the program was so popular that it will probably be repeated at the regular Annual Meeting of the Association in Buffalo in October.

The current interest in milk control was expressed by the vigorous discussion in the session devoted to this subject, in which interesting papers were presented by Dr. Harris, Mr. Larson, Mr. Frank and Mr. Osborne.

Since the number of nurses in attendance at the Congress was so greatly in excess of the health officers and public health engineers, the attendance at the session on Domestic and Industrial Wastes in relation to Public Water Supply was larger than expected. This session was a joint session with the New Jersey Sanitary Association.

At all recent annual meetings of the American Public Health Association, joint sessions of the sections have proved themselves popular features and they will again be emphasized at the Buffalo meeting. The Congress, however, provided an opportunity for an interesting experiment in this direction and some of the most valuable sessions of the Congress were those arranged jointly between the American Public Health Association and the American Child Health Association, the American Social Hygiene Association and the National Organization for Public Health Nursing.

Unfortunately, the meeting rooms were in many cases too small to accommodate delegates. Hundreds were unable to find a place in some of the joint sessions. Fortunately, however, the National Health Council has arranged to publish the papers given in the General Sessions. Those who subscribe to the proceedings in advance of publication will be able to secure them for $1.00. Subsequent to publication the price will be increased to $1.50.*

Six thousand people were registered as attending this first American Health Congress. It was an epochal event which will probably do much to advance the closer relationship of the voluntary popular health organizations and make easier the coöperation of these societies with the professional workers organized in the American Public Health Association.

The Congress included a small sample of American Public Health Association gatherings. The program of papers and entertainment planned for the 55th regular Annual Meeting of the Association to be held in Buffalo, October 11–14, indicates that this sample but inadequately represented the attractiveness of the offerings of that occasion.

* Subscriptions may be forwarded to the National Health Council, 370 Seventh Ave., New York City.

LIST OF NEW MEMBERS

Gregorio Araoz Alfaro, M.D., Buenos Aires, Argentina, President of the National Department of Health (Assoc.)

Hazen S. Atkins, D.V.M., Pontiac, Mich., in charge of Dairy and Food Division, Pontiac Public Health Department

Richard Olding Beard, M.D., Minneapolis, Minn., Executive Secretary, Hennepin County Public Health Association

Luiz Nunes Briggs, M.D., Rio de Janeiro, Brazil, substituting the Director of Vital Statistics Bureau in the National Department of Health (Assoc.)

Dorothy Bryant, Augusta, Me., Director Division of Dental Hygiene, State Department of Health

Eleanor A. Campbell, M.D., New York, N. Y., General Director Judson Health Center

John S. Chambers, M.S., M.D., Lexington, Ky., County Health Officer

L. W. Chobe, Los Angeles, Calif., Supervisor of Milk Control, Los Angeles County Health Department

Theophilo de Almeida, M.D., Rio de Janeiro, Brazil, Venereal Diseases Bureau (Assoc.)

Clarence R. DeYoung, B.S., South Holland, Ill., Graduate Work at Chicago University (Assoc.)

Horace G. Dunham, M.D., Brooklyn, N. Y., Medical Officer, American Telephone and Telegraph Co. Medical Department, New York

Maurice B. Eaton, Sunnyvale, Calif., City Health Officer

Manuel Jose Ferreira, M.D., Rio de Janeiro, Brazil, Director Public Health Department in Rio de Janeiro (Assoc.)

Herman Fischer, M.D., Los Angeles, Calif., Deputy Health Officer, Los Angeles County

Alice Margaret Flood, M.D., New York, N. Y. (Assoc.)

Emilio Gomes, M.D., Rio de Janeiro, Brazil, Director Public Health Laboratory of the National Department of Health (Assoc.)

Edith Granger, R.N., Orange, N. J., Superintendent Orange Visiting Nurse Association

Katharine M. Hagar, R.N., Cambridge, Mass., Superintendent Cambridge Visiting Nurse Association

Herbert A. Jewett, Glendale, Calif., Sanitary and Food Officer

Eleanor Beckwith Jones, B.A., R.N., Circleville, O., previously Ohio State Department of Health

Jonathan R. Kirkpatrick, B.S., South Pasadena, Calif., Chief of the Food Division, Los Angeles County Health Department

Abdon Eloy Estellita Lins, M.D., Rio Grande do Sul, Brazil, Laboratory Assistant (Assoc.)

Raul d'Almeida Magalhaes, M.D., Rio de Janeiro, Brazil, Secretary of the National Department of Health (Assoc.)

Grady F. Mathews, M.D., Oklahoma City, Okla., Epidemiology

Arthur P. Miller, C.E., Washington, D. C., Associate Sanitary Engineer, U. S. Public Health Service

C. W. Munger, S.B., M.D., Valhalla, N. Y., Director Hospitals and Health of Westchester County

Mary Parsons, R.N., Cambridge, Mass., Assistant Superintendent Cambridge Visiting Nurse Association

Robert Parsons, S.B., Lynn, Mass., with Parke, Davis & Co., Detroit, Mich.

Eugenio Lindenberg Porto Rocha, M.D., Rio de Janeiro, Brazil, Chief Assistant of the Public Health Laboratory of the National Department of Health (Assoc.)

Ellen C. Potter, M.D., Harrisburg, Pa., Secretary Department of Welfare, Pennsylvania

Charles W. Rice, M.D., Northumberland, Pa., Chief of Pennsylvania State Chest Clinic, Sunbury, Pa., Well Baby Clinic, Northumberland

Marion McCune Rice, A.B., B.S., R.N., Boston, Mass., Director School of Public Health Nursing, Simmons College

Clarence L. Russell, M.D., Utica, N. Y., Director, Utica City Laboratory

S. Clifford Rutland, M.D., LaGrange, Ga., Commissioner of Health, Troup County

Clealand S. Sargent, M.D., Dover, Del., Director Division of Child Hygiene, State Board of Health

DeWitt Smith, M.D., Dallas, Tex., Medical Director Southwestern Life Insurance Co.

Asa H. Speer, M.D., Corpus Christi, Tex., City Health Officer

Helen V. Stevens, B.S., R.N., Pittsburgh, Pa., Acting Director, Pittsburgh Public Health Nursing Association

John Wayner, Kroonstad, O.F.S., Africa (Assoc.)

Herman G. Weiskotten, M.D., Syracuse, N. Y., Commissioner of Health

John A. Wesener, Ph.C., M.D., Chicago, Ill., President of the Columbus Laboratories

Robert S. Whipple, Denver, Colo., State Water Bacteriologist, Colorado State Board of Health

C. Howard Witmer, M.D., Lancaster, Pa., Medical Director Lancaster County

DECEASED MEMBERS AND FELLOWS

Horace J. Howk, M.D., elected as member of the A.P.H.A. in 1915, and a Fellow in the Industrial Hygiene Section in 1922, died at Johns Hopkins Hospital, Baltimore, Md., April 8. Dr. Howk was assistant medical director of the Metropolitan Life Insurance Company, New York City, and the physician in charge and administrator of the company's sanatorium at Mt. McGregor, New York.

Roscoe E. Doolittle, M.D., 2217 Grant Street, Evanston, Ill., died April 25. Dr. Doolittle became a member of the A.P.H.A. in 1912, and was elected a Fellow of the Association in 1922, and served as chairman of the Committee on Food and Drugs for 1924–1925.

Miss Edith Twiss, Vassar College, Poughkeepsie, N. Y., died in March. Miss Twiss was elected a member of the Association in 1916.

LETTER TO THE EDITOR

TO THE EDITOR:

I have read the first report of your committee as presented to the Food and Drugs Section of the American Public Health Association at St. Louis in October, 1925.*

It is a deep source of gratification to me that this committee of professionals and scientists officially recognize the merits of pasteurization of milk.

I have demonstrated the urgent need for pasteurization and its benefits for the past thirty-three years. Like every other pioneer, I have met with a great deal of opposition, with incredulity and with derision. But I persevered in spite of it, and I have lived to see the methods I have applied thoroughly justified, and pasteurization adopted in many parts of the civilized world.

I was rather surprised to read in your report what you call "the most insidious artifice devised in recent years by the enemies of pasteurization" and the advocates of raw milk. It is fortunate for the public that, owing to your vigilance, you discovered this trick of trying to make the legal standard of pasteurization so high that the milk's nutritive qualities and digestibility are damaged—and pasteurization thereby discredited.

You are familiar with my work, on which I need not enlarge. I am proud to have been the pioneer in devising the method and introducing this life-saving measure of pasteurization of milk.

I am sending you herewith the latest death rate statistics published by the New York Health Department. This demonstrates the number of lives saved in New York City alone since the introduction of pasteurization.

Very cordially yours,

NATHAN STRAUS

119 Fifth Avenue, New York City,
April 28, 1926.

* Dairy Products and Eggs. *A. J. P. H.*, Apr., 1926.

PUBLIC HEALTH NOTES

State Charity Aid Committee Meets—The Committee on Tuberculosis and Public Health of the New York State Charities Aid Association will hold its annual meeting June 1–3 in Cattaraugus County, N. Y., with headquarters at Olean and Salamanca. This will give delegates to the meeting an opportunity to observe the organization and work of Rural Health Demonstration undertaken by Cattaraugus County with the advice and financial assistance of the Milbank Memorial Fund.

Dusseldorf Exhibition—Health from many aspects will be featured at the Great German Exhibition at Dusseldorf which opened May 8. The Institute for Tropical Hygiene of Hamburg, the Museum for Hygiene of Dresden, the International Red Cross and the Health Section of the League of Nations are among the participants at the exhibition.

The Haus des Arztes, pavilion of the physician, is included among the exhibits. The exhibit on housing and settlements will stress fire prevention organizations, watering devices, sanitation, heating and ventilation, and food and clothing. In another section the leaders of German science, colleges and academies of practical medicine and several private clinical surgeries will present the results of their experimental investigations.

The exhibition will cover an area of 100 acres with the buildings alone occupying nearly 30 acres.

P. E. Fansler in New Position—P. E. Fansler, associate editor of the *Heating and Ventilating Magazine*, has been appointed secretary of the Department of Public Relations of the National Council of American Society of Heating and Ventilating Engineers.

As Secretary of Public Relations, Mr. Fansler will study the basic engineering principles involved in the heating and ventilation of buildings with special attention to the scientific investigations conducted at the research laboratory of the American Society of Heating and Ventilating Engineers. He will interpret these studies and data for the use of professional engineers. The studies will also be prepared in a form interesting to the public.

Cutting Down Heavenly Flowers—Chinese and foreign business men have recognized their responsibility in freeing China from the scourge of smallpox that sweeps across the country every year. The Chinese name for that dread disease is "Heavenly Flowers," and according to W. W. Peter, M.D., Council on Health Education, Shanghai, China, the 1926 crop of Heavenly Flowers promises to be a large one. The mortality from this disease is especially high among children.

The definite program for advancing the general practice of vaccination outlined by leaders of the business and professional life of China speaks well for the future health improvement of the country.

In Shanghai the Rotary Club assumed responsibility of an educational campaign directed against smallpox and for the acceptance of vaccination. It asked the Council on Health Education to submit a poster showing a happy Chinese baby in smiles but pointing to the scars on its arm. The caption was a simple warning: "To prevent Heavenly Flowers, vaccinate at once." The British American Tobacco Company (China), Limited, which operates one of the largest and most modern equipped printing establishments in Asia, printed the posters at cost and contributed 7,500 large ones (30 x 40 inches) and 7,500 small ones (10 x 15 inches). They also increased the colors from the original four to six. A total of 42,000 sheets were printed and the Rotary Club voted $125 to cover the postage cost for free distribution of the campaign material.

Dr. Peter describes the distribution of the posters as follows:

Distribution was a fascinating task in which many participated. One Rotarian, Carl Crow, who operates an advertising agency in China, offered the use of his large staff to post 5,000 of the large pictures on his billboards in whatever large centers we wished to have them displayed. This he did entirely at his own expense. The Rotarian president, A. R. Hager, volunteered the services of his organization in preparing 3,700 sheets of suggestions covering the use of these posters in schools, hospitals and churches, 2,600 form letters and 700 individual letters. When Dr. Lai, a Canton manufacturer of smallpox vaccine, heard of this campaign he gave enough free vaccine to vaccinate 18,000 people. The National Epidemic Prevention Bureau in Peking also sent a large quantity of vaccine. The Shanghai Municipal Council Health Department Laboratory offered a discount of 25 per cent for quantity purchases of vaccine. Posters with free vaccine were sent to all the Chinese and foreign doctors on the lists of the National Medical Association and the China Medical Association. Posters were also sent to 400 middle schools, 800 primary schools, 1,500 pastors of Chinese churches, to visitors who passed through the office of the Council on Health Education. The Chinese Red Cross Society sent 500 posters to each of its branches throughout China. As fast as the folders could prepare the envelopes, posters were sent to the Chinese post office by the wheelbarrow load.

Poster used by Council on Health Education

Two Health Organizations Merge—With the merging of the Associated Out-Patient Clinics of New York City with the New York Tuberculosis and Health Association effected very rceently the latter organization is extending its work from tuberculosis prevention to include the field of general health.

The name of the Associated Out-Patient Clinics will be retained as the name of a department of the New York Tuberculosis and Health Association. Dr. Albert Lambert, chairman of the executive committee of the Associated Out-Patient Clinics, will continue to serve in that capacity and will also be a member of the board of directors of the New York Tuberculosis and Health Association of which Dr. James Alex. Miller is president.

BOOKS AND REPORTS

TEN BEST SELLERS

HOW diversified are the interests in health literature? The Book Service Department of the A.P.H.A. has compiled from its sales records of the last 6 months the following 10 best sellers. Technical publications and community health survey reports are well in the lead, but the bookshelf of popularity is shared by the popular health book, the semi-technical publication and the scientific manual.

1. Proceedings of the International Conference on Sanitary Engineering. Institution of Sanitary Engineers. London (1924). $4.00.
2. A Health Survey of 86 Cities. American Child Health Association (1925). $3.00.
3. The Child: His Nature and His Needs. The Children's Foundation (1925). $1.25.
4. Manual of American Water Works Practice. A. W. W. A. (1925). $3.00.
5. Public Health Law. James A. Tobey (1925). $4.50.
6. Child Hygiene. Josephine Baker, M.D. (1925). $5.00.
7. How Our Bodies Are Made. R. M. Wilson (1925). $1.75.
8. The Laws of Health and How to Teach Them. C.-E. A. Winslow and Pauline Brooks Williamson (1925). $1.60.
9. Principles of Public Health Engineering. Earle B. Phelps (1925). $3.00.
10. Personal and Community Health. C. E. Turner (1925). $2.50.

Annals of the "Pickett-Thompson" Research Laboratory, *Vol. I, No. 1. London, W. C. 2: St. Paul's Hospital, 24 Endell Street,* 1924. *Williams & Wilkins, American Distributors.* Paper, 25s. net.

In a handsomely printed and well illustrated book of 216 pages, Annals of the "Pickett-Thompson" Research Labiratory makes its bow to the scientific world. Under the presidency of Sir Ronald Ross, this research laboratory is conducted in affiliation with St. Paul's Hospital, London.

The volume is taken up largely with researches on the virus of variola-vaccinia and studies concerning measles and scarlet fever. The rest of the book is devoted to a great extent to experiments with detoxicated vaccines prepared according to the method proposed by Dr. Thompson.

The plan of presentation is excellent. The articles begin with a thorough review of the literature, followed by a description of the researches made by the writers of the several articles, and end with conservative conclusions. An excellent bibliography is attached to each article. Considering the nature of the three main topics discussed, one is not surprised that the conclusions are not dogmatic. Concerning variola-vaccinia, we are told that the virus cannot be an ordinary bacterium, and that it is not filterable. The Guarnieri cell inclusions are believed to be parasites, and probably hold the key to the problem which will be solved only when these bodies are cultivated. No definite conclusions have been reached in regard to measles. The claims of Caronia are not more valid than those of a number of other observers. Immunity tests following in general the Schick method are suggested as a method of study.

A hemolytic streptococcus is most probably the cause of scarlet fever. There is no doubt that it plays an important rôle in the disease. It is probably that first described by Klein in 1885, and more completely studied by Gordon in 1898 and later. In view of the unfortunate attitude taken by certain workers in the United States, it is interesting to note the way in which the author ends his article: 'The history of man's struggle to discover the cause of this important disease during the past forty years is very interesting and if, as seems probable, it is eventually definitely proved to be due to a streptococcus, then it way truly be said that the discovery is one which has been made by no single individual alone but by a mass of patient workers who have helped to establish the fabric of proof."

The book is profusely illustrated with reproductions of microphotographs and two full-page colored plates. It is a most interesting volume which we recommend without hesitation.

M. P. RAVENEL

The Natural Increase of Mankind—*By J. Shirley Sweeney. Baltimore: Williams & Wilkins,* 1926. 185 pp. Price, $4.00.

In this exceedingly interesting little volume, Dr. Sweeney builds a picture of the biological position of various countries and of the world as a whole on the basis of a consideration of the vital index, 100 times the ratio of births to deaths—an index which measures the present evolutionary survival value of a population.

In reading this book one cannot fail to be impressed with the quantity of information that a consideration of this easily determined index yields. That such a study provides food for speculation concerning the world's population problems becomes at once evident to the reader.

Dr. Sweeney shows that although practically all countries have rather high mean indices, indicating continuous population growth, there exists considerable variation in the index between the different countries. It is his feeling that the countries having high indices are most likely to be contenders in the race for peopling the earth's surface. It appears to the reviewer that this may be open to some question. When one recalls Dr. Pearl's logistic curve of population growth it is easy to postulate the emigration of peoples from a highly overpopulated country (one with a rather low index) to one in which the conditions favoring survival are better, with a consequent change in the logistic curve in both the native and in the new environment. In fact this is indicated by Dr. Sweeney's data on the increase of the French population of Canada as contrasted with that of France.

One of the most interesting and illuminating points brought out by this volume is that the effect of war and pestilence on the vital index is almost insignificant. It is true that a country's population may be reduced by war or pestilence but soon after the effects are worn off and the vital index is back approximately to its pre-war magnitude. For example, the average weighted pre- and post-war vital indices of 9 different belligerent countries for the years 1913 and 1920 are identical.

The fact that practically all populations are biologically healthy and that war and pestilence have only a temporary influence on the vital index causes Dr. Sweeney to close his book with a discussion of the world problem of population. A review of this discussion would be too time-consuming to print here, however Dr. Sweeney feels that a league of "stationary populations" while producing the same end result as Dr. Cox's "League of Low Birth Rate" would be more feasible from the point of view of application, since a low birth rate is a relative term whereas a stationary population avoids the possibility of discrimination.

This most absorbing volume should be read by everyone interested in the problem of population. Without a knowledge of this work one must fail to possess a very serviceable approach to the problem. The introduction which provides an excellent background for the study has been admirably prepared by Dr. William H. Welch.

LEONARD GREENBURG

Textbook of Physiology—*By Arthur D. Bush, M.D., Emory University. Philadelphia: Lea and Febiger,* 1926. 322 pp., 101 illustrations.

This text is designed to meet the needs of the middle ground course in physiology between the elementary school requirements and specialized medical science training. The purpose of the author is admirable. His abbreviation of the subject will seem to many to be too great. It hardly seems possible to condense into seven or eight pages an adequate treatment of muscle physiology, for instance.

In the treatment of the nervous system there is an excellent handling of the development of this system through evolution but an undue amount of detail on cerebral structure and function, which in its detail suggests medical physiology rather than practical informative subject matter. The treatment of the sense of vision is complete and detailed and seems to be out of proportion to its practical significance when compared with the brief treatment of other senses.

The book is admirably made up. The illustrations are excellent and the original diagrams the best that the reviewer has seen in any text on physiology.

For a very short course in physiology without any extraneous subjects this book will serve as a guide but in any case the information presented will in many instances have to be elaborated from some other source or by lectures. Suitable references for additional reading are listed at the end of the major chapters.

For a complete course in informative physiology in institutions where an all round treatment of the essentials of the subject is desired the text is too brief, and too ill-balanced.

J. W. M. BUNKER

Far Eastern Association of Tropical Medicine—*Transactions of the Fifth Biennial Congress held at Singapore*, 1924. *Edited by Dr. A. S. Hoops and Dr. J. W. Scharff. London: John Bale, Sons & Danielson.* xx+974 pp., 86 pls. Price, 40/0.

The address of welcome to this association closes with this significant remark, "Perhaps the greatest of all fights which the West has carried east of Suez is the devoted, unselfish, and impartial labours of modern medical science. In the operating theatre and laboratory, at any rate, 'there is neither East nor West, border, nor breed nor birth.'" The aims of this association are the promotion of medicine and the union of the profession, diffusion, and publication of scientific knowledge, promotion of friendly international intercourse, elevation of medical education, and the enlightenment of public opinion on the prevention of disease. Its list of members is an index of racial diversity and its scientific publications are proof of its high standards. They also indicate the breadth of interest in public health and preventive medicine.

Quite naturally malaria takes first place with 14 papers and much discussion of control but relatively little of treatment. In the Malay States, districts abandoned because of malaria have with the growth of the rubber industry been reëntered and the spleen rate in children held down to 0.9 per cent in the mangrove zone by mosquito control. In dense populations in heavy mosquito infestations, quininization fails when used alone. The need of accurate knowledge of the biology of mosquitoes is emphasized. Coöperation of administrators and investigators is urged.

The Sumatra system of centralized hospital facilities under scientific leadership with ample laboratory equipment and personnel has resulted in noticeable reductions in the sick rate and death rate, especially from hookworm, amebiasis, typhoid and beriberi.

The anemia of hookworm disease is attributed by Dr. De Langen not to hemolysis or to loss of blood but to a toxic factor influencing various organs, especially the bone marrow. Dr. Djamil finds a disturbance in renal function in this disease which he attributes to a toxin.

Dr. Wu Lien Tch cites data supporting the contention that the whole central plateau of Asia is a great endemic focus for the plague with the tarabagan or Siberian marmot playing the primary rôle as carrier. Leprosy, smallpox, beriberi, dysenteries, yaws, dengue, and cholera also appear in the rich and varied program offered at this congress of pioneers on the firing line in the fight against disease in the tropics.

C. A. KOFOID

Land-Grant College Education, 1910–1920—*Part V—Home Economics. United States Department of the Interior, Bureau of Education Bulletin*, 1925, No. 29.

This bulletin combines the historical and contemporary development of the home economics departments in the land-grant colleges, growing out of the survey of land-grant college education in this country, and it gives us a greater appreciation of the part these colleges have taken in this field of education. The contributors responsible for assembling material for the bulletin are eminent specialists in the many phases of home economics. Just a glance at the chapter headings gives an idea how broad the scope of home economics in its modern interpretation is: child welfare, nursing and pre-nursing, foods and nutrition, housing and design, textiles and clothing, household administration, institutional management, training of teachers in home economics, research and extension and service.

As early as 1840, Catherine Beecher's "Treatise on Domestic Economy" was used in eastern schools for young women, but it was not until 1875 that this subject actually became a part of the curriculum and it was Iowa College that first introduced care of children in its course of domestic economy. The history of the private organizations, federal departments and colleges from the start made by Iowa College up to the present day nursery schools is briefly sketched.

Crude beginnings in nursing and pre-nursing education were begun 60 years ago and Teachers College, Columbia University, was the first to introduce a course in "hospital economy." The teaching of nutrition has followed the modern educational trend in all the land-grant colleges, which have shifted from the lecture method to the problem-project method, such as the school lunch, nutrition classes, clinic, and care of a baby in the practice house.

Briefly summarizing the objective of home economics courses in the land-grant college—they all aim to develop health habits and food practices in the effort to produce healthy human beings. The pamphlet is a valuable addition to the history of education in the United States.

A. B. T.

The Medical Follies—*By Morris Fishbein, M.D., Editor of the Journal of the American Medical Association. New York: Boni and Liveright,* 1925. 223 pp. Price, $2.00.

Human beings, it seems, are capable of being foolish regarding medical matters also. It is not because of the nature of medicine, or of religion, or of politics, or of economics, that follies arise and flourish; it is because of the nature of man. That being the case, it is but adding to our already numerous follies to deal with the errors and deceptions and illusions of the past as though we had at last attained perfect knowledge and wisdom.

Dr. Fishbein writes entertainingly as well as competently about various cults that have attempted to simplify life by means of universal formulas for the diagnosis and, or, treatment of disease, such as homeopathy, osteopathy, chiropractic, electronics, mental healing. He points out how a cult grows by appealing to the common ignorance of large numbers who are open-minded not only because their minds are empty, but because they are in distress and therefore pining for the magic word or the magic touch.

Whether suffering humanity is offered the Perkins tractor, the Mesmer magnetism, the Abrams oscillation, the Coué jingle, the Hahnemann dilution, the Still bone-setting, or a gold brick by any other name, it thinks that it gets what it wants and what it pays for; and once in so often it gets relieved of at least a part of its suffering, but always it gets relieved of its money. The scientific doctor tells us that wherever a tractor or an Abrams treatment, or a spinal adjustment, or what not, brings relief, the result is due to causes other than those claimed by the manipulator or operator. The scientific doctor is no doubt correct. The masses who support the priests of the various cults at "something more than a good living" have no way of discriminating, they get the best they know—considering what advertising and other forms of public education can and do accomplish—and would accept scientific or honest medical service, if there were some way of "selling" it to them.

There are excellent chapters on the press in relation to popular obfuscation, on the "Big Muscle Boys" (two of the most notorious of those described passed away while the American Public Health Association was having its meeting in St. Louis), on the follies of health legislation, on birth control, on the exploitation of popular ignorance regarding "glands" and regarding animal experimentation. These chapters are excellent because they are informative and reliable, and because they are calculated to stimulate thinking where that is possible.

The historical point of view can be made of great value to the public as well as to the professional man; it should lend perspective, and at least suggest the need for seeking relative values; it should make one wary of extravagant claims for new discoveries, but also aware that important new discoveries are in the offing. For these reasons Dr. Fishbein's collection of essays can be heartily commended to doctors, teachers, health officials, editors, reformers, and to such portions of the lay public as really want to know.

Those who have briefs for one or another "specialty" and those who lack a sense of humor should be carefully guarded from this book, since it has dangerous features as well as decided merits. It is always dangerous to deal lightly with the convictions (however ill advised) and financial investments (however fraudulently obtained) of sincere people; and it is dangerous to deal superciliously with the fragmentary truths of other people's follies, for it is out of fragmentary truths that our reliable scientific knowledge eventually emerges.

B. C. G.

A Manual for Speakers on Health Topics—*By Iago Galdston, M.D. New York: National Tuberculosis Association,* 1925. 80 pp. Paper. Price, 50 cents.

A revised edition has been issued by the National Tuberculosis Association. As director of the Health Speakers Service of the New York Tuberculosis Association, and himself an experienced speaker on health topics, Dr. Galdston is well qualified to prepare a book of this kind.

Part I of the Handbook deals with the selecting and training of a speaker; choosing the subject matter and adapting it to the audience; the preparation and delivery of the talk and such adjuncts of the lecture as the distribution of literature and the use of slides, charts or objects. Radio broadcasting and special problems in speaking to industrial workers and school children are discussed briefly.

Part II contains a series of suggested outlines for health talks to lower and upper grades in schools, to teachers, high school pupils, and various groups of adults. Most

of the outlines provide for the logical development of a topic, but do not help the speaker to choose or arrange his material with a view to securing and holding attention. There are a few exceptions, including one talk called "Health in the Home," and another on "The Body's War on Disease," both of which suggest interesting analogies. Most speakers on health need assistance in enlivening their talks more than in outlining the divisions of the subject.

M. S. R.

Sixty Years in Medical Harness—*By Charles Beneulyn Johnson, M.D. Introduction by Victor Robinson, M.D. Vol. I of The Library of Medical History. New York: Medical Life Press, 12 Mt. Morris Park, West,* 1926. 333 pp. Price, $3.00.

Biographies always hold a certain interest and most autobiographies are still more interesting. The book before us is not so much an autobiography as a history of the times in which the author has lived. Beginning with the Civil War, during which the author first came into contact with medical work, though he did not graduate until after the war was over, it brings us down to the present time, covering a period which has been more rich in discoveries and advances of all kinds than any other period of the world's history. The author was an old-time country practitioner, doing his work in the prairie country of the Middle West, first on horseback and later in the old fashioned one-horse buggy. His life illustrates also a topic which has been considerably before the medical public recently, namely, the relation of the private practitioner to public health. He was the first health officer of his community, and tells us of the difficulties he encountered in trying to enforce quarantine of contagious diseases. Although much of his life was spent in the country, and all of it either there or in small towns, he has come into contact with many of the best known men in American medicine. He gives also the history of the formation of some of the early medical societies. Some stories are repeated and many statements which are correct and could have been easily verified are qualified by some such statement as "If I remember rightly."

A number of interesting sketches are given of well known professors in American medical colleges. Altogether the book is a distinct contribution of the history of a period of remarkable activity, written in a simple and sincere style with no attempt at effect. Such criticisms as may be made of its arrangement do not detract from the human interest, which is evident on every page. It tells of men who belonged to a noble profession, and who practiced that profession for the benefit of their patients and the community, and not as a trade—a type of doctor which is all too rare at the present time. We commend the book to all, especially since we believe that the younger generation of physicians is too much inclined to belittle the old type of doctor who appears on every page, and who lived and did his work well in the day before medical palaces of white tile, plate glass and enamel were so common; men who were philosophers, guides and friends, who set an example of that devotion to ideals which did so much to make the medical profession of America what it is to-day.

M. P. RAVENEL

Municipal Index 1926—*By the American City Magazine, Harold S. Buttenheim, Editor, 443 Fourth Avenue, New York City.* 599 pp. Price, $4.00.

The 1926 Municipal Index is a volume which health officers and health workers will find of interest and use in their daily work. One is impressed with the large amount of useful information concerning municipal administration which has been gotten together in this convenient form. In this year's publication is presented in complete detail the plan of health organization for cities of 50,000, as published in *A Health Survey of 86 Cities* by the American Child Health Association in 1925. There is also a bibliography of public health, welfare and education which will be found useful throughout the year.

The organization of sanitary services, collection and disposal of garbage, ashes and rubbish will provide information for those health officers who are still responsible for these services. A complete analysis of the water supply of cities as to type, capacity, consumption, per cent metered, rates, and many other items, will prove valuable when the water supply of your city is under discussion.

The section on "Recreation" gives information by cities as to the number of parks and playgrounds, their total acreage and the number of swimming pools. A list of the local civic commercial organizations in different cities will be found of use from time to time.

It is somewhat disappointing, however, in looking through the volume to see that public health departments are not set forth in detail

as to personnel and the name of the chief executive, as is done for the police and fire departments. The deficiency is not entirely attributable to the editors of the Municipal Index. Health officers and health workers should use their influence to see that information regarding this service is available and completely represented in any statement of municipal administration, as are other protective services.

W. F. WALKER

Byways to Health— *Detouring the Scrap-Heap. By Thomas D. Wood, M.D., and Theresa Dansdill, A.M. New York: Appleton,* 1925. 198 pp. Price, $1.50.

This book is just what its authors intended it to be—an amusing but truthful presentation of scientific health information, chiefly for lay readers. Two valuable features of the book are the excellent mental hygiene suggestions and the perspective the book gives of the entire personal health program. With the large number of books which stress nutrition or exercise or health examinations or some other phase of health work, it is hardly to be expected that the average lay person will invariably be able to perceive relative values or see the health program as a whole. Yet it is only the well-rounded program which actually functions in health.

The complete health program includes, of course, mental hygiene; but mental hygiene is not the bugbear it looks to some who are puzzled by long technical words and phrases. It is usually a matter of good common sense and a measure of unselfishness.

Dr. Wood's name as joint author guarantees the soundness of the information but will hardly prepare some readers for the light vein in which the book is written. Miss Dansdill, joint author with Dr. Wood, is Director of Health Education with the North Carolina Tuberculosis Association, and author of *Health Training in Schools.*

Byways to Health will doubtless be a helpful guide to man people who really are desirous of "detouring the scrap-heap" but who prefer their reading to be entertaining and are inclined to avoid anything that looks heavy and serious. The authors perhaps feel that if we are to have a nation converted to health, all groups must be reached with accurate health information; and to reach them, the language and manner of presentation must be such as will readily appeal to them.

HARRIET WEDGEWOOD

Simplifying Motherhood—*By Frank Howard Richardson. New York: Putnam,* 1926. 263 pp. Price, $1.75.

Here is something new under the sun—a book on the care of the baby that stresses breast feeding. It is written with the conviction that "Any mother who really wants to do so, can nurse her baby for as long a period as she or her doctor desires." Many an author has lauded maternal nursing, but here is one who actually believes in it as a possibility, and dares act accordingly.

In his book the basic principles underlying successful breast feeding and the technic of maintaining and increasing the milk supply are explained in detail. Nor is all this theory, for the author has worked on these principles in his large pediatric practice and also in the Nassau County Breast Feeding Campaign with which he was connected.

There are chapters in which some of our pet ideas about the care of the baby are cast into the discard, with little consideration for the prestige they have gained from the approval of "specialists," but with some consideration for the common sense of the much-despaired-of grandmother.

On the whole, however, it is a refreshing book. Every doctor and every nurse who comes in contact with mothers or prospective mothers should not only own it, but should read, mark, learn, and inwardly digest its contents and incorporate its doctrines of maternal nursing into his or her teaching.

The book is written in simple, readable style. It is liberally, though poorly, illustrated.

MERRILL E. CHAMPION

Clinical Laboratory Diagnosis. *Designed for the Use of Students and Practitioners of Medicine. By Roger Sylvester Morris, A.B., M.D., Professor of Medicine in the University of Cincinnati. New York: D. Appleton & Co.,* 1923. 456 pp. Price, $6.00.

This book is a useful addition to the library of the clinical diagnostician. It is of moderate size, yet complete. The descriptions are simple and clear, and the illustrations on the whole excellent.

Particularly to be commended in point of arrangement is the tabulation of conditions in which certain findings may be looked for, for example: blood in stomach contents, the different types of blood cells in various conditions, and the types of anemias. It contains all of the usual tests and is singularly free from errors.

Occasionally a statement is made not quite up to date, as that the formation of urobilinogen ceases when there is complete biliary obstruction. Mann and others have produced evidence to show that urobilin is formed even when the liver is excised, probably being formed in the blood and excreted normally by the liver, though it may be excreted in other ways. However, the few questionable statements of this kind which are found do not detract seriously from the value of the book, which we consider well above the average. If we should select one chapter above others for praise, it is that on the blood, which is full and well arranged.

Opposite the title page is a quotation from Chauffard, in the translation of which the author has taken what we consider unjustifiable liberties. Chauffard says that the laboratory often "corrects" the clinical observations, while the author makes him say that it "clinches the diagnosis."

The book is well printed and unusually free from typographical errors. We commend particularly the index of authors which is sufficiently complete and does not indicate a desire on the part of the author to show off.

M. P. RAVENEL

Applied Municipal Sanitation—*By V. M. Ehlers, E. G. Eggert and Ella G. White. Austin, Texas: Texas Association of Sanitarians,* 1925. 167 pp. Price, $1.60.

This small volume is in reality a handbook on applied sanitation, not necessarily limited to cities. It is not designed to be an exhaustive treatise on the subject but presents in clear, concise language, with ample diagrams and illustrations, the solution of the problems of sanitation which will confront the health officer, either urban or rural, in a large part of the country.

The book deals specifically with the subject of water, sewage disposal, mosquito control, milk sanitation, shellfish protection, camps, parks, swimming pools, problems of general sanitation, and to a very limited degree with educational activities. To the physician and layman who are frequently called upon to take part in sanitary work or to make recommendations regarding it, this is a book of great value.

The section on water supply shows graphically by pictures and diagrams the potential dangers to water supplies and the different methods of protection. Several methods for installing liquid chlorine sterilizers are presented. It should be mentioned, however, that the 3-barrel method of using hyperchloride, which has done splendid duty in many emergencies, is omitted from this volume. The general availability of chlorine gas and feed apparatus may make this unnecessary.

The section on mosquito control discusses quite completely the habits of 3 species, culex, aedes and anopheles. For the one who is entirely new to the methods of control a somewhat more graphic presentation would be desirable.

The barn and milk house plans presented in the section on milk sanitation should make it easy for the farmer to obtain a full score on the score card which is also shown.

On the whole it may be said that the authors have succeeded as they started out to do in embodying "the fundamentals of the problems confronting the local health officials, sanitary workers, public health nurses and students."

W. F. WALKER

Animal Parasites and Human Disease—*By Asa C. Chandler. (3d ed.) New York: Wiley & Sons,* 1926. 1–573 pp., 1–254 figs. Price, $4.50.

The author states in the preface that this book is written especially for the laity and this fact is to be held in mind in reading the text. In its avowed purpose, the book is a distinct success and it clearly shows the training of a teacher. Its usefulness should, however, extend far beyond the laity, for it furnishes an excellent, interesting and instructive review of the subject which may well be read with profit by medical students, zoölogical students, health officers, physicians, and even by specialists in parasitology.

From the standpoint of the specialist, the book impresses one as covering fields which may be divided into several specialities (protozoölogy, helminthology, arachnology, entomology), too extensive for any one investigator to keep thoroughly abreast of in all detail, and one is impressed by the wide knowledge of the literature possessed by the author. From this viewpoint also, the specialist is not to be surprised when he occasionally finds passages which he considers *sub judice* or even with which he may not entirely agree. In general, on controversial points the author gives both sides of the question; as a special case in point, the importance attached to *Endamoeba gingivalis* will be questioned by some of us, though we should be fair enough to admit that

a difference of opinion still exists on this subject.

The frank boldness with which the author discusses syphilis must excite our respect, even if upon finishing this portion we may have the counteracting thought that after all the world still continues to be a place where we can be happy. In general the impression is given that the author tries to lead his reader, even if in the discussion on *Treponema pallidum* he may seem temporarily to assume the rôle of a driver. Considering the general fair tone of the discussions, a professional pedagogue will feel that the author is not to be adversely criticised if, here and there, he uses pedagogic technic and occasionally drives his points home by an apparent enthusiasm or an apparent pessimism—for the experienced teacher knows that technic is as necessary in teaching as it is in staining slides for use under the microscope.

The book does not pretend to be either monographic or taxonomic; accordingly, it is not presented and can not serve as a laboratory manual. It is exactly what it claims to be, a book for general collateral reading, and as such it deserves a distinct success.

C. W. STILES

The Problem Child in School—*Narratives from Case Records of Visiting Teachers. By Mary B. Sayles. With a description of the Purpose and Scope of Visiting Teacher Work, by Howard W. Nudd. New York Joint Committee on Methods of Preventing Delinquency.* 1925. 288 pp. Price, $1.00.

The contribution of this book to health education appears to me great. In the modern approved school health program, mental hygiene is stressed as being one of the important phases to be considered. Mental hygiene is not something that can be taught. There can be no drills, no chores, no book instruction, without defeating the very purpose. Mental hygiene can only be secured to a child by a complete, all-round and sympathetic understanding of his behavior and a modification of the child's handling by school and parent.

The contribution of this book lies in the concrete and specific way in which it shows how such an understanding of children may be obtained and what has been done in specific schools for specific children to make the adjustment. It is valuable because it is a restrained statement and not overoptimistic. Though it deals with "problem children," the principles of action thus derived are those which should guide every teacher and every parent in the handling of normal children, or rather children who are not problems at the particular moment. Such case studies of the behavior are as much a part of the fundamental equipment of health teachers as familiarity with the subject matter of nutrition or physiology.

If we consider health to be "the realization of the highest physical, mental and spiritual possibilities of the individual," then the contribution of this little book to health education is significant.

EMMA DOLFINGER

The Cell in Development and Heredity—*By Edmund B. Wilson. (Third Edition, revised and enlarged.) New York: Macmillan,* 1925. 1232 pp., 529 figs. Price, $9.00.

The field of cytology is basic for all biological sciences since the cell is the unit of both structure and function next in importance to the individual. Genetics has arisen as a new biological discipline in part from the cytological advances in recent years. Physiology is advancing in no small degree because of discoveries in cellular biology. Pathology will make new advances when interpretations of pathogenic agencies are sought in the structure and function of the cell rather than the tissue.

The great service which the two earlier editions of Wilson's *The Cell* have rendered to biologists throughout the world has made doubly welcome this last revision from the pen of the Nestor of American cytologists. The coherent and dramatic advances in investigation of the cellular mechanism of heredity and the ever-enlarging correlations with biochemistry and biophysics have made necessary a complete rewriting of the entire work and its considerable enlargement.

The 1,232 pages of this encyclopedic treatise deal largely with Metazoan cells, with ample comparisons with those of the Metaphyta. A single chapter only is given to reproduction and syngamy in lower organisms, with the significant statement that a full account would require a large volume. It is to be hoped that some equally competent protistologist may undertake the task of organizing the widely dispersed, often conflicting, and usually inadequate accounts of the cytology of the bacteria and protozoa and thus give clarity and impetus in these fields of investigation, such as Professor Wilson's *The Cell* has given to the cellular biology of the higher organisms. Such service would undoubtedly furnish new vantage grounds for the attacks upon disease.

C. A. KOFOID

What Evolution Is—*By George Howard Parker, Professor of Zoölogy and Director of the Zoölogical Laboratory, Harvard University. Cambridge, Mass.: Harvard University Press,* 1925. ix+173 pp. Ill. Price, $1.50.

Evolution for John Doe—*By Henshaw Ward. Foreword by Lorande Loss Woodruff. Indianapolis: Bobbs-Merrill Company,* 1925. 354 pp. Price, $3.50.

Evolution in the Light of Modern Knowledge—*A Collective Work. New York: D. Van Nostrand Co.,* 1925. xv+528 pp. Ill. Price, $3.00.

There is no doubt that last summer's comedy relief for the dog days, widely advertised as the monkey trial, has driven many people to the library, and even to the book store, for ammunition in the verbal battles that were stimulated wherever newspapers are read. One need not apologize at this date for rereading Darwin's Origin of Species, nor for seeking a more easily handled summary of the evolution idea in accordance with his intellectual equipment and capacity to read serious literature. There is indeed a constant need for restating what scientists and philosophers are finding and thinking about the problems of life and its development.

In these 3 books a wide range of needs is met, although it may not be quite true that every need is adequately supplied by them. Professor Parker concentrates a survey of the arguments for evolution and of the factors that have been offered in explanation of the process of evolution, for the benefit of those who already have a background of biological information. This may serve in fact as a review outline rather than as a primary introduction to the subject. Professor Parker makes a very significant point of the fact that Cuvier, the French anatomist, who was through his life a vigorous opponent of the idea of evolution, contributed so much to laying the foundations of that branch of science that has yielded among the most important evidences for descent with modification. This situation is by no means unique. We ought not to expect Cuvier to foresee all the implications of the facts that he assembled; nor can his authority as an anatomist support his opinion regarding problems that are, after all, beyond his special knowledge.

Mr. Ward has made an admirable beginning toward the elucidation of the subject of evolution for the lay reader. The book is excellently written and assembles a vast body of technical material for the non-technical public. Perhaps its chief defect is in attempting to tell too much. Another weakness is the journalistic attempt to arouse interest by stressing the wonders of nature. The material itself is authentic enough and excellently organized. If it is rather too confusing for a beginner, the book should be helpful for quick reference on the part of educated persons who are not specialists in the field. The illustrations are well chosen and well reproduced for the most part. The distinctive contribution that Mr. Ward makes to a wider understanding of the fundamental issues involved in the discussion of evolution is his chapter, "The Evidence from the Rivalry of Scientists." He makes out a rather good case for the outside sceptic by emphasizing the constant watchfulness of research workers both to detect weak spots in the theories and pronouncements of their rivals and to protect themselves against premature publication and bad judgment. This may be an excessive emphasis upon the value of scientists as authority; but it has the merit of raising the question of the value of lay opinions on technical problems. And in every field, we seem to be pretty much intimidated by the need for meeting lay opinion.

For the reader who is prepared to give deliberate thought to the status and the implications of the theory of evolution in various fields of present-day research, the symposium by a dozen English scientists and philosophers furnishes a valuable digest of recent advances. Most of the writers are well known in all parts of the world. The book possesses a dignity and an authoritativeness that should make it especially attractive to educated men and women who want to know what various specialists are doing without trying themselves to be specialists in every department.

The departments treated and their authors are: Cosmogony—James H. Jeans; The Evolution of the Earth as a Planet—Harold Jeffreys; Geology—William W. Watts; Biology—Conway Lloyd Morgan; Botany—Frederick O. Bower; Zoölogy—Ernest W. McBride; Physiology—Marcus S. Pembrey; Anthropology—G. Elliot Smith; Mental Evolution—William M'Dougall; Physics and Chemistry—Frederick Soddy; Time and Space—Alfred A. Robb; Philosophy—A. E. Taylor; The Religious Effect of the Idea of Evolution—James Maurice Wilson. At the end of each chapter there is a brief modern bibliography. The book is well indexed and illustrated. B. C. GRUENBERG

Light and Health—*By M. Luckiesh and A. J. Pacini, Directors, Research Laboratories, General Electric Co. Baltimore: Williams & Wilkins Co.*, 1926. 302 pp. Price, $5.00.

This work reads "like a romance in science," although limited to the field indicated by the title. The senior author is well known to us as a leading illumination authority while the junior author's name occurs much in present day professional journals. Both have contributed freely in the present book from their own discoveries. The preface states that the book is founded upon data which appears to be well established and suggestive, as well as correlating the physical and biological viewpoints. The material is presented as free as possible from technical terms for general readers, health officials, and scientific men not specialized in the subject. The work has evolved from the fact that controllable radiation, or "radiant energy," or "light," has been discovered.

"Solar radiation has been a powerful environmental factor in the evolution of life which has culminated in the human being." Apparently "radiations of certain wave lengths are as essential as oxygen to the health of biological beings including man." An enormous amount of data and theory have appeared on the subject and the authors seem to have made a wide and commendable selection, particularly if the reader keeps in mind that they "often find themselves on the border of the unknown and even beyond the regions of conjecture."

The fifteen chapters discuss, in order, the nature of light and radiation, climate and the human race, light and the origin of life (its relation to chlorophyll in the plant and to hematin the animal's blood); the relationship of light to blood, to the skin (sunburn, pigmentation, disease), the glands (personalities, old age and rejuvenation), the skeleton, the muscles, the nerves, the viscera; to infection and hygiene; to the special senses; the psychological effects of light; and the subject of lighting for health and happiness (near-sightedness, glare, eyestrain, production, fatigue, and safety).

From the first page the style and subject matter prove entrancingly interesting. It is clear that at times the speculative is not differentiated from the factual and also some of the discussions leave one in doubt as to whether the authors' optimistic interpretations are safe. Still, the work proves a true stimulus to thought and speculation even to the most unimaginative. Valuable graphs, tables, and cuts of spectra, as well as numerous illustrations of the effects of light upon the body and the methods of its application for different purposes are given. Naturally, the greater part of the discussion concerns the theme of the day, *ultraviolet light*, although the entire subject of "radiant energy," from the long infra-red to the gamma rays of radium, are discussed. Nor, while discussing man's triumphs with artificial light as a substitution for sunlight, do the authors belittle the omnipotence of sunlight and daylight, though they emphasize its feebleness in "ultraviolet" for many days of the year, especially in northern climes. One can often pick statements that are too comprehensive, such as "Blondes always burn; brunettes always tan. The exceptions are too few to comment upon." Inconsistencies occur, such as (p. 258) "the case seems reasonably strong against ultraviolet radiation as one of the possible causes of cataract," whereas (p. 262), "if this is repeated too often, opacities develop in the lens ultimately producing cataract." Repetitions occur but, the reviewer thinks, only pleasurably and enough to emphasize. An error occurs here and there, but the book shows the marks of much thought and high class modern press work. The authors use the Angstrom unit which places most of the wave lengths discussed in thousands in contrast to the English writers who use the milli-micron unit and thus talk in hundreds—numbers perhaps more easily negotiated by the reader.

It is probably not going too far to say that almost every imaginable relation of light to the health of the human body and its organs and parts is discussed with a representative but not overweighed consideration of disease relationships, but all perhaps too optimistically. We must bear in mind that the vast part of the human race has spent most of its time out-of-doors, that such existence, as illustrated by the present life of the natives of India which is said to average only 25 years as against our 55 years and more "indoorness," has not immunized the race materially against many infections, and that many believe the subject of diet is of equal importance to light, etc. Also as Dr. Dixon says, there must be some good reason why we tend to avoid even too much sunlight. The names of many investigators are mentioned though no bibliographical references are given, which is probably allowable in a book of this nature.

The index is woefully abbreviated, but is not a Table of Contents showing chapters enough in a good recital well told? The writers have done an excellent piece of work in their attempt to popularize a mass of scientific data and show that "truth is stranger than fiction." Is the scientist perhaps to become the popular writer of the day with his *vade mecum?*

EMERY R. HAYHURST

An International Year Book of Child Care and Protection—*Compiled by Edward Fuller. New York and London: Longmans, Green & Co.*, 1924. 448 pp. Price, $2.50.

This volume is an excellent record of state and voluntary effort for the welfare of the child, being published for the Save the Children Fund. It is the first attempt to picture the present position of the nurture of children throughout the world. Marriage and divorce, child welfare, education, juvenile employment, delinquency, legislation, and voluntary societies and institutions are considered under the various states or countries.

Most of the 350 sovereign states, colonies, and dependencies reviewed have made efforts to care for and protect children. Educational work is remarkably widespread but child welfare and hygiene have progressed only in the more highly industrialized countries of the world.

The statement made in the introduction crediting Maryland with the highest and Nebraska with the lowest infant mortality rate in the United States is not in agreement with the table given on pages 312–313. Furthermore, the impression may be gained that not all of the states in the United States have marriage and divorce laws, since no mention in several instances is made of them. E. H. B.

Health Control in Mercantile Life—*By Arthur B. Emmons, 2d, A.B., M.D., Director, Harvard Mercantile Health Work, etc. New York: Harper & Brothers*, 1926. 234 pp. Price, $3.

This book is based on consulting work recently done by the Harvard Mercantile Health Work in over 25 department stores and may be regarded as the first comprehensive and authoritative statement of methods of conducting such work in this country. The author, who is a well known physician and industrial hygienist, claims that the methods described have resulted in the reduction of sickness and absences wherever they have been applied. The book comprises 19 chapters which begin with an historical résumé, a statement of the problem and a discussion of the human and environmental relations. Then follow the "store health department" including space, equipment, budget, and records.

A chapter is devoted to personnel, one to sanitary considerations, another to the individual's adjustment to work. A quite complete discussion of physical examinations and of the individual's work capacity comprise others. Medical care, health education, health of executives, dental services, legal requirements, mutual benefit associations, the small store health problem and the relative values of store health work for conserving human energy complete the book. A short but adequate index is included. There are several graphs or charts and some good illustrations. Each chapter ends with a short summary. The book cites not only experiences but freely discusses the ideals and philosophy of the subject. It is written for doctors, nurses, personnel workers and office managers. This work again demonstrates in a practical manner not only the human but commercial value of health service in industry. EMERY R. HAYHURST

Mental Growth of Children in Relation to the Rate of Growth in Bodily Development—*By Buford J. Johnson. New York: E. P. Dutton & Co.*, 1926. 160 pp. Price, $3.50.

This volume presents a partial report of the study made by the Bureau of Educational Experiments in New York City during the years 1918–1923. It is to a large extent a compilation of their findings, but contains as well a description of some of the tests used and the manner of their application. It is essentially a book of reference and will be of value to those who are seeking norms of development and who wish to learn the value of tests and measurements used in this field of study.

The need for investigations along the lines indicated by the title has been felt by many students and the work reported here is a commendable contribution to the subject. It is apparent that the studies were carried on with care and with all the precision possible. It is too early to expect general conclusions to be drawn or for any but the simplest relations to be worked out. The important thing is that the research has been started. We may confidently look forward to more work of this sort from Dr. Johnson and colleagues.

JOHN D. MCCARTHY

An Approach to Social Medicine—*F. L. Dunham, M. D. Baltimore: Williams and Wilkins Co.*, 1925. 242 pp. Price, $4.00.

Dr. Dunham introduces a new definition of social medicine as a field whose "purpose is to further the application of scientific methods of organization to man's social habits in order to determine their usual biological characteristics, to discover the sources, causes and effects of instability and to establish a sympathetic equilibrium between the organism's innate and acquired tendencies." In other words, the author attempts to outline the fundamental principles of biology, medicine and psychiatry in their application to social biology, medicine and psychiatry in their application to social work.

The positions taken in this book are in general sound and conservative, although we may question whether "it is only by annihilating the germ" that tuberculosis "eventually will be stamped out." The book has an admirable background of wide and discriminating reading, cultural as well as scientific. It should be of substantial value to the serious student of medical and psychiatric social work. For the expert in these fields it contains little that is really new and for the average medical man or health worker it would be found somewhat hard reading.

C.-E. A. WINSLOW

Some Fundamental Considerations in the Treatment of Empyema Thoracis—*By E. A. Graham, M.D. St. Louis, Mo.: C. V. Mosby Company*, 1925. 110 pp. Price, $2.50.

The book considers the following topics: Careful avoidance of pneumothorax in acute stage; prevention of chronic empyema; careful attention to nutrition of the patient.

Before the Empyema Commission took up the study, the average mortality rate was between 25 and 30 per cent. But since the adoption of the cardinal points outlined by the commission, the rate has dropped to the low figure of 3.4 per cent.

It is of prime importance to avoid early open pneumothorax in acute stage of empyema, for if the patient is still suffering from pneumonia, and if the abscess wall has not become organized, open pneumothorax would only add to the difficulty of the already partially asphyxiated patient.

The question immediately arises regarding the time and type of operation. In the matter of time a few days' difference on either side is of no great importance. A convenient criterion is the appearance of frank pus. By the time the exudate has changed from its original serofibrinous nature to the purulent, and the pneumonic involvement has practically cleared up, the vital capacity has probably increased; the patient's resistance is better; and the abscess has walled off.

The type of operation performed should be one which will provide adequate drainage. A method of treatment consisting merely of a primary thoracotomy, and using a tiny catheter is not sufficient, because it does not allow free escape of exudate. Dr. Graham thinks that an intercostal opening into which a tube can be snugly fitted is preferable to rib resection. One of the reasons for this opinion is that osteomyelitis sometimes occurs in the exposed cut ends of the ribs. However, Dr. Graham feels that the matter of the acute pneumonic involvement subsiding before the operation is of greater importance than the method used. If an early operation is performed, it is wiser to do a simple thoracotomy.

Prevention of chronic empyema is brought about by early sterilization of the cavity and by the obliteration of the cavity. Before the World War, the only means known was drainage aided by mechanical removal of thickened exudate by simple irrigation. The Empyema Commission feels that Dakin's solution properly used will bring about an early obliteration of the cavity.

A marked loss of nitrogen occurs during the acute stage of streptococcus empyema. If the diet consists of only 1,000 to 1,700 calories per day, the patient is losing in excretions 15 to 20 grams of nitrogen per day more than he is taking into the body. If the food intake is pushed so that the patient gets 3,000 to 3,500 calories per day, the nitrogen balance will be positive and there will usually be a gain in weight rather than a loss.

The commission believes that it is as important that the patient be given a sufficient quantity of food as it is to attend to any other part of the treatment of empyema. This is a difficulty encountered during the early stage of the disease. An effective way to give the patient a large amount of carbohydrate is by administering drinks containing lactose, since this sugar is not sweet and has so little taste that it can be easily disguised by the presence of fruit juice. The maintenance of high liquid intake is also important.

This book is an excellent treatise on the subject.

ALBERT G. BOWER

Report of the Committee on Public Health on Periodic Medical Examinations of Apparently Healthy Persons—*By The Medical Society of the County of Kings, Brooklyn*, 1926. 77 pp.

Health officers and physicians interested in preventive and preclinical medicine and its application to the individual will be interested in this authoritative pamphlet.

The Medical Society of the County of Kings examined 91 of its own members and the report gives in detail the physical findings of these examinations. It also gives a wealth of information and reference. When the physician and health officer more thoroughly appreciate the importance of health maintenance, all forces interested in this branch of medicine will concentrate upon its development and it will more generally become a part of every doctor's work. This is now possible because private medical practice, which has perforce been largely on an emergency or catastrophe basis in the past, is now changing and is no longer dependent upon fear for bringing the patient to the doctor.

In the appendix the leaflets that have been issued by the Medical Society of the County of Kings are reproduced in facsimile, as is the material used by the Brooklyn Health Examination Committee. In addition to the blank devised by the American Medical Association, the report contains the blanks for adults and children worked out by the Medical Committee of the Brooklyn Health Examination Committee.

The conclusions of the Committee are interesting and stress the value of the personal physician, the importance of systematic work on the part of the physician and the necessity for follow-up.

The report is a distinct contribution to the advance of the application of medical science to the needs of the public. H. N. C.

The Care, Cure, and Education of the Crippled Child—*By Henry Edward Abt. Elyria, Ohio: The International Society for Crippled Children*, 1924. 222 pp. Price, $3.50.

The first part of this volume deals with a general study of the care, cure, and education of crippled children, showing the increasing feeling of social responsibility for adequate care of the cripple. A survey of the existing facilities is given, with the number of cripples in this country.

The chief feature of this book is the directory of the American organizations and institutions for treating, educating and caring for crippled children. These are listed by state and city, comments being made as to equipment, field covered and needs.

A bibliography of 35 pages refers especially to the care and education of crippled children, and "surgical" tuberculosis in children.

E. H. B.

BOOKS RECEIVED DURING APRIL

METHODS OF INVESTIGATING VENTILATION AND ITS EFFECTS. By H. M. Vernon and Others. London: Medical Research Council, 1926. 71 pp. Price, 2s.

REST WORK. A Study of Relaxed Concentration. By Gerald Stanley Lee. Northampton: The Coördination Guild, 1925. 400 pp. Price, $2.50.

PEDIGREE OF THE HUMAN RACE. By Harris Hawthorne Wilder, Ph.D. New York: Henry Holt, 1926. 368 pp. Price, $3.25.

A MANUAL OF HYGIENE AND SANITATION. Eighth Edition, Enlarged and Revised. By Seneca Egbert, A.M., M.D., Dr.P.H. Philadelphia: Lea & Febiger, 1926. 616 pp. Price, $4.00.

AN INTRODUCTION TO CYTOLOGY. Second Edition. By Lester W. Sharp. New York: McGraw-Hill, 1926. 581 pp. Price, $5.00.

ANNALS OF THE "PICKETT-THOMSON" RESEARCH LABORATORY. Vol. I, No. 1, July, 1924. London: The "Pickett-Thomson" Research Laboratory. (Williams & Wilkins, American distributors.) 216 pp. Price, 25s.

THE NEED FOR EUGENIC REFORM. By Major Leonard Darwin. New York: Appleton, 1926. 529 pp. Price, $4.00.

ADVISING THE TUBERCULOUS ABOUT EMPLOYMENT. By W. I. Hamilton and T. B. Kidner. Baltimore: Williams & Wilkins, 1926. 171 pp. Price, $2.00.

THE BACTERIOPHAGE AND ITS BEHAVIOR. By F. d'Herelle. Translated by George H. Smith. Baltimore: Williams & Wilkins, 1926. 629 pp. Price, $8.00.

ACUTE INFECTIOUS DISEASES A Handbook for Practitioners and Students. Brooklyn: Physicians & Surgeons Book Co., 1925. 376 pp. Price, $5.00.

THE MODERN HEALTH BOOKS.

The House of Health; What the Modern Dwelling Needs to Be. By Sir John Robertson.

The Fight Against Infection. By Lieut.-Col. G. E. F. Stammers.

The Health of the Workers: Trades as they affect the lives of the workers.

The Child at School. By Sir Leslie Mackenzie.

Food: Its Use and Abuse. By Kate Platt.

London: Faber and Gwyer, 1925–1926. Average 225 pp. Cloth, $1.25 per volume.

PLANNING A TUBERCULOUS SANATORIUM. Technical Series No. 6. By T. B. Kidner. New York: National Tuberculosis Association, 1926. 36 pp. Price, $.25.

THE CLINICAL INTERPRETATION OF THE WASSERMANN REACTION. By Robert A. Kilduffe, A.B., A.M., M.D. Philadelphia: Lea & Febiger, 1926. 203 pp. Price, $2.50.

HEALTH DEPARTMENT REPORTS

IRA V. HISCOCK

Brookline, Mass.—The 1925 report of Brookline contains several points of administrative interest. The major portion of the report is printed in good readable type, the detailed statistical tables being properly set in small type for economy of space. The front gray cover, set off by the city seal, would be very attractive were 10 lines of type giving the detailed contents of the report omitted. The expenditures of the board of health of this city of 42,941 people amounted to $237,939 in 1925, but this included $148,671 for the collection of ashes, garbage, and rubbish, and $38,333 for the maintenance of a hospital and the support of patients elsewhere, in addition to $7,799 for fly and mosquito suppression.

A general mortality rate of 11.29 per 1,000 inhabitants is recorded with an infant mortality rate of 54.4 per 1,000 births. All the infant welfare work is done by the Brookline Friendly Society at the Community Health Center. This service includes prenatal and baby clinics as well as nursing care. A health bulletin is published quarterly and is distributed by the police department to every house in the town for the purpose of promoting education in health matters. Continued progress is reported in the enforcement of regulations prohibiting the sale of unpasteurized milk except from herds which have been tuberculin tested and thereafter maintained under the accredited herd plan.

There were only 10 cases of diphtheria reported with no deaths, as compared with 16 cases and no deaths in 1924. It is felt that the use of the Schick test and toxin-antitoxin undertaken in 1923 has played a part in bringing about this gratifying situation. A total of 4,245 children have been given this protection. Another noteworthy activity is the provision of free consultation service with specialists in diseases of the lung for the promotion of early diagnosis of tuberculosis.

New London, Conn.—New London had an estimated population in 1924 of 28,421. A report of the various city departments for that year, published in attractive form, consists of 40 pages, bound in covers of soft yellow color, the front cover bearing the city seal (a three masted schooner), the back cover showing the many governmental and marine activities at New London. An excellent chart on the inside cover indicates the organization and lines of contact of different municipal branches of government, with a city manager to appoint, supervise and remove the heads of various departments.

Following a roster of city officials and a brief introductory statement, there appears a classified statement of appropriations and expenditures, the latter amounting to $1,305,357. A supplementary table shows the taxpayer that 1.2 cents of every dollar was expended for health, as compared, for example, with 31.8 cents for education, 4.2 cents for charity, 7.5 cents for police protection, 3.3 cents for the department of fire and building inspection, 6.7 cents for the water and sewer department, 3.5 cents for ash and garbage collection, and 1.4 cents for parks.

From the report of the department of health it is learned that the year was crowned with relative freedom from epidemic diseases, due in large degree to "the medical inspection in the schools and the excellent work of the school nurses." A municipal clinic for venereal disease control is operated, active supervision of the milk supply is exercised, and a campaign for diphtheria immunization has been waged through coöperation with the State Department of Health and the local medical society.

Palo Alto, Calif.—Palo Alto is one of the few small cities which publish an annual report of its health department. The present report of 20 pages for the year 1925 follows the high standard set by those previously published, and indicates a well conceived program of health promotion, with a continuing decline in communicable disease incidence and in the general death rate (7.4). Had the Palo Alto death rate from "preventable causes" been the same as that of the state (4.4 in 1924) instead of 1.32, 46 persons would have died from these causes instead of 14. An infant mortality rate of 57.2 is recorded. The population in 1925, as shown by a special census, was 10,602.

The health officer believes in the value of well selected photographs and charts, and presents on the first page a picture of the Palo Alto tree from which the city derives its name. An effective chart of communicable disease regulation occupies the second page. while statistical tables and graphs are used to advantage

throughout the report. The tables are printed from cuts of drawings made in the department, a common practice in engineering work. This plan has certain advantages in a small city which does not have access to large printing concerns. Concerning this matter the health officer writes: "With the type at our disposal it is doubtful if the tables on pages 10 and 11 could have been put on one page each. After the drawing is checked there is chance for errors to creep in. Also the cost of composition for the two tables mentioned is less under this plan than if they had to be set up."

The per capita expenditure through the health department amounted to 97.6 cents. This included salaries of the health officer, a dairy inspector, two nurses, and a stenographer, as well as maintenance of a laboratory, medical supplies, and transportation. In addition to these expenditures, the salary of a sanitary inspector is charged to the destructor plant, and one-half of the salary and transportation of the nurses is paid by the school board.

New Zealand—The report of the Department of Health of New Zealand for the year ended March 31, 1925, occupies 64 pages, 8½" x 13", well printed and bound in gray covers with a well arranged front cover. The detailed report is preceded by a classified table of contents thereby enabling the reader to locate promptly individual topics of interest at the moment. An abundance of tables, with a few noteworthy graphs, a photograph of one section of the dental training clinic at Wellington and a plan for a small maternity hospital, add interest to the report.

The general review of the Acting Director-General of Health suggests that the period was marked by wider and more intensive activities than previously, due in part to a strengthened personnel and in part to a growing interest displayed by the public in preventive medicine in general and the promotion of maternal welfare in particular. The crude death rate was 8.29 per 1,000 of mean population; the infant mortality rate was 40.2 per 1,000 births; the tuberculosis death rate was 56.7 per 100,000 of mean population. These constitute record figures for New Zealand. A low birth rate (21.7) and a still-birth rate of 30.5 per 1,000 live births "are disquieting features of the returns. There is no doubt that our population is best replenished and our empty spaces filled by our natural increase; the new-born infant in other words, is our best immigrant."

An active campaign for the reduction of maternal mortality (5.0 per 1,000 births) was instituted in 1923. A reduction of the mortality rate of infants under one month (to 24 per 1,000 births) has already been observed. "An integral part of the maternal welfare campaign is the scheme recently brought into force whereunder antenatal clinics are provided throughout New Zealand to which expectant mothers can go for advice and treatment. Great things are hoped for by this, both as regards mother and infant. It is obvious that by prompt attention many illnesses in pregnancy will be eliminated and many tragedies at birth prevented."

Montana—A concise and interesting report for the years 1923–24 has been rendered by the Montana State Board of Health. The activities of the child welfare division were materially extended during the period, and the work of the hygienic laboratory and of water supply supervision was maintained through cooperation with the International Health Board and the U. S. Public Health Service. An outstanding feature of an infantile paralysis epidemic which started during the summer vacation of 1924 was the action of the Western Montana Medical Association in appointing from its membership an orthopedic commission for the after-treatment of the cases. This action was taken before the epidemic had subsided so that the commission was well organized before many of the cases were ready for treatment. Specially trained nurses were employed, physicians were designated for the work, and a program of treatment was outlined. The commission contributed half the funds, the other half being raised by 3 counties.

Through coöperation with the United States Public Health Service, which maintains a research laboratory at Hamilton, studies of the spotted fever problem have been continued. In 1922 there were 58 cases reported with 15 deaths; in 1923, 47 cases with 12 deaths; and during the first 10 months of 1924, 44 cases, with 10 deaths.

The division of child welfare has concentrated largely upon its field work. In coöperation with the Montana Tuberculosis Association, the division has placed an expert public health nurse in each of 4 districts of the state for nursing supervision and stimulation of interest through conferences in schools, churches, and other public buildings, as well as through inspection of children and to advise mothers and expectant mothers.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON

BAUER, J. H., and MEYER, K. F. Human Intestinal Carriers of Tetanus Spores in California. *J. Infect. Dis.*, 38:4 (April), 1926.

A report of a bacteriologic study of the feces of 487 residents of California (taken at random), in which one-quarter of the persons were found to be carriers of the tetanus bacillus. Age, sex, and occupation play no part in the distribution of carriers.

BENNETT, R. A. An Incinerator for Four Residential Communities. *Am. City*, 34:5 (May), 1926.

A description of a joint garbage destructor.

BROWN, E. G. A Comparison of Full-Time and Part-Time County Health Units in Kansas. *Pub. Health Rep.*, 41:17 (Apr. 23), 1926.

Statistical evidence of the value of full-time health administration, which will prove valuable to administrators who are fighting part-time health service.

CAMPBELL, J. E. Venereal Diseases. *Pub. Health J.* (Canadian), 17:3 (Mar.), 1926.

A philosophical discussion of the problem of venereal disease control in which the author concludes that early chemical disinfection is the one hope of control. Sanitarians will be stimulated—and entertained—by the discussion, but many will be unconvinced.

CASSIE, ETHEL. Some Aspects of Child Welfare Work in the United States and Canada. *Pub. Health*, 39:7 (Apr.), 1926.

"To see ourselves as others see us," read this kindly account of an English visitor. Dr. Cassie says: "The determination to ignore the midwife . . . seems rather remarkable in a country that makes a sentimental cult of motherhood."

CHALMERS, A. K.; ALLAN, G. A.; ROBERTS, E. T.; and McKAIL, D. The Prevention of Heart Disease. *Pub. Health*, 39:7 (Apr.), 1926.

A symposium on the prevention of heart disease presented from the point of view of the public health administrator, the practicing physician, the school physician, and the industrial surgeon.

COSTILL, H. B. Midwifery Supervision Succeeds in New Jersey. *Nation's Health*, 8:4 (Apr.), 1926.

Recounting the benefits accruing to the state through the supervision of midwives as practiced in New Jersey. In 7 years the number of midwives was reduced from about 1,000 to 387; the percentage of births attended from 40 to 23 per cent of total.

FELTY, A. R., and HEATLEY, A. A. The Nasal Passages in Lobar Pneumonia: A Clinical and Bacteriologic Study. *Jour. A. M. A.*, 86:16 (Apr. 17), 1926.

A brief report of the study of 16 cases in which pneumococci were found in nasal fossae; a pneumococcal sinusitis frequently accompanied the lobar pneumonia.

DODSON, J. M. Periodic Health Examinations. *J. Missouri M. A.*, 23:3 (Mar.), 1926.

A brief résumé of the evolution of the health examination program with a discussion of methods.

ELIOT, M. M. A Demonstration of Community Control of Rickets. *Child Health Bull.*, 2:2 (Mar.), 1926.

A report of the studies of the New Haven demonstration carried on jointly by the U. S. Children's Bureau and the Yale University School of Medicine. Cod liver oil and regular sun baths given from earliest infancy prevented rickets (except first degree conditions), whereas the disease was found nearly universally in control groups.

FAVILLE, KATHERINE. Rural Public Health Nurse Meets Special Problems. *Nation's Health*, 8:4 (Apr.), 1926.

The author portrays the pitfalls menacing the rural nurse who undertakes pioneering work, and argues the missionary value of rural nursing as the forerunner of county health units.

FREEMAN, A. W. The Training of Sanitarians. *Pub. Health News* (N. J. State Dept. of Health), 11:5-6 (Apr.–May), 1926.

A discussion of the need for adequately trained health officials, the type of training required, and the means by which such training might be provided.

GESELL, ARNOLD. A Comparative Method for Demonstration of Normal Development in Infancy. *Jour. A. M. A.*, 86:17 (Apr. 24), 1926.

An effectively presented record of a study of the normal infant as an aid to the detection of developmental retardation.

GODFREY, E. S., JR. Influenza and Measles, Their Epidemiologic Similarity. *New York State J. M.*, 26:7 (Apr. 1), 1926.

A stimulating discussion of the epidemiologic similarity of measles and influenza, with a plea for better control of measles in order that health officials may be better prepared to deal with future epidemics of influenza.

GREENBAUM, S. S. Error of Basing Serum Diagnosis of Syphilis on the Kahn Reaction Alone. *Jour. A. M. A.*, 86:17 (Apr. 24), 1926.

A comparison of Kolmer's modification of the Wassermann test and the Kahn test. The author emphasizes the error of basing serum diagnosis of syphilis on the Kahn reaction alone, but his statistics show a similar error on basing the diagnosis on the Kolmer reaction.

GREGORY, A. C. Trenton's New Sewage Disposal Plant. *Am. City*, 34:5 (May), 1926.

Recounting the Trenton (N. J.) sewage disposal problem and describing the construction of the plant erected to stop the pollution of the Delaware River.

HEKTOEN, L., and LOVETT, B. R. The Prevention of Measles. *Med. Off.*, 35:15 (Apr. 10), 1926.

A note on the use and dosage of measles convalescent serum.

HOFFMAN, F. L. Southern Health and Welfare. *Prudential Press*, 1926.

An address delivered before the Southern Governors' Conference outlining the recent progress of health administration in the South.

HUNTOON, F. M.; MURPHY, J. A.; and CRAIG, S. H. Field Observations in Scarlet Fever. *J. Lab. & Clin. Med.*, 11:7 (Apr.), 1926.

Among other findings is the important one that immunizing doses of scarlatinal toxin appear to induce prompt resistance to infection and hence may be used in the presence of an epidemic.

KEEFER, C. E. Experience with Sludge Digestion at the Baltimore Sewage Works. *Am. City*, 34:4 (Apr.), 1926.

A discussion of digestion processes for sludge from Imhoff and settling tanks.

LEACH, C. N. The Relative Incidence of Typhoid Fever in Cities, Towns, and Country Districts of a Southern State. *Pub. Health Rep.*, 41:16 (Apr. 16), 1926.

A study of the typhoid fever case and death rates of rural districts, small and large towns in Alabama, showing the towns of 500 to 2,500 population to be the worst offenders and most in need of sanitary betterment.

LEVIN, I. Etiology of Cancer. *New York State J. M.*, 26:7 (Apr. 1), 1926.

A survey of work on plant and inoculable animal parasites with a consideration of the possible rôle of parasites as an etiological factor.

LEVY, JULIUS. Prevention of Rickets—A Public Health Problem. *J. M. Soc. New Jersey*, 23:4 (Apr.), 1926.

A paper emphasizing the fact that rickets is a condition of early infancy and urging the inclusion of cod liver oil as a regular part of the infant's diet.

LEWINSKI-CORWIN, E. H. Community Responsibility of Hospitals. *Pub. Health Rep.*, 41:14 (Apr. 2), 1926.

A discussion of the hospital's function and responsibility to the community it serves.

NICHOLS, H. J., and HITCHENS, A. P. The Reactions of Typhoid Vaccination. *J. Lab. & Clin. Med.*, 11:6 (Mar.), 1926.

A critical review of immunizing studies against typhoid, suggesting the need for diagnostic aids to determine immunity.

PHILLIPS, W. C. The Physician and the Patient of the Future. *Jour. A. M. A.*, 86:17 (Apr. 24), 1926.

The President's address before the Annual Session of the A.M.A. will interest every sanitarian. His advocacy of health examinations and popular health education will do much to further these two important features of the modern public health program.

PARK, W. H. The Use of the Schick Test Before and After Injection of Toxin-Antitoxin for Immunization. *New York State J. M.*, 26:8 (Apr. 15), 1926.

In a brief paper Dr. Park answers several troublesome questions, such as: when to Schick test; is toxin-antitoxin dangerous? and does toxin-antitoxin sensitize the patient to serum?

PARSONS, L. G. The Value of Irradiated Cholesterol in the Treatment of Rickets. *Brit. M. J.*, 3403 (Mar. 20), 1926.

Report of a case of severe rickets which improved but slightly with cod liver oil, but which was cured by the administration of irradiated cholesterol.

PUTNAM, R. W. Sewage Disposal Problems of Chicago. *Mil. Surgeon*, 58:3 (Mar.), 1926.

More than a description of the Chicago sewage disposal project, as its title would imply, this paper is a comprehensive record of the growth of lake pollution and the general program of the lake cities to stop the contamination of the main source of potable water.

ROLLESTON, J. D. The Prevention and Arrest of Diphtheria. *J. State Med.*, 34:4 (Apr.), 1926.

A lecture covering in detail the subjects indicated by the title; of particular interest because of the record of increase of diphtheria in London as contrasted with the marked decline in some American cities where toxin-antitoxin has been employed extensively.

SHAW, T. B. Observations on the Incidence and Prevention of Venereal Disease in the Royal Navy. *J. State Med.*, 34:3 (Mar.), 1926.

The increase in venereal infections in the British Navy following the war years is noted as is the proportionate increase in gonorrhea. More effective immediate disinfection after exposure is urged.

SLYE, MAUD. The Relation of Inbreeding to Tumor Production: Studies in the Incidence and Inheritability of Spontaneous Tumors in Mice. *Woman's M. J.*, 33:4 (Apr.), 1926.

Evidence presented to refute misquotations from Miss Slye's preceding reports.

SMITH, M. I.; MCCLOSKY, W. T.; and HENDRICK, E. G. The Influence of Vitamin Deficiencies on Susceptibility to Certain Poisons. *Pub. Health Rep.*, 41:17 (Apr. 23), 1926.

A study of the toxicity of drugs (including cardiac and nervous stimulants and depressives) for vitamin-deficient rats.

STEVENS, A. M. Carbon Monoxide Poisoning. *Jour. A. M. A.*, 86:16 (Apr. 17), 1926.

The author emphasizes the susceptibility of children to carbon monoxide poisoning, and urges the early recognition of gradual poisoning, the signs of which are described.

TOWNSEND, M. L. Health Education to Prevent Heart Disease. *South. M. J.*, 19:4 (Apr.), 1926.

A plea for a concerted effort to prevent heart disease by proper care of focal infections and infectious fevers.

LABORATORY

C. C. YOUNG

HYPERIMMUNIZATION BY MEANS OF DIPHTHERIA ANATOXIN *

DR. B. FEIERABEND

Formerly Fellow of the International Health Board

THE following experimental work has been performed in order to determine whether completely atoxic diphtheria toxin, anatoxin, is a better immunizing agent than the toxin in accordance with Ramon's statement.[1]

Our diphtheria toxin No. 26, having a toxicity of 400 m.l.d. per c.c., and flocculation capacity of 9 "antigenic units" (Lf = 0.11 c.c.) was divided into two portions. To one portion was added 0.35 per cent tricresol, for the use as regular toxin, and to the other portion was added 0.25 per cent formol after which is was incubated at 38° C. for 110 days, at which time it was atoxic. Five sheep were immunized with the regular toxin, and 6 with the anatoxin. All the animals were of the same breed, weight, and age. During 53 days of immunization the toxin animals received a total of 1,500 to 1,700 c.c. of toxin in 20 or 21 injections, and the anatoxin animals received 1,750 to 2,100 c.c. of anatoxin in 15 to 19 injections. Test bleedings were made at 15, 30, and 45 days, and a bleeding of 1,000 c.c. was made on the 60th day of immunization. The results are shown in Table I.

Titrations under 1 unit of antitoxin were made by Roemer's intracutaneous method; between 1 and 4 units by the subcutaneous method; higher titers by the flocculation method for an approximation, and then precisely by the subcutaneous test. Agreement between the flocculation method and the guinea pig methods was in most cases about 15 per cent; in one case, however, the flocculation test indicated a titer of 110 units, whereas the guinea pig test showed a titer of only 75 units.

The result shows clearly that the immunity developing in the anatoxin animals appears earlier than in the toxin animals. On the 15th day the anatoxin animals had an average of 5.5 units of antitoxin per c.c., whereas the toxin animals had only an average of 1/3 unit. However, on the 60th day of immunization the toxin animals had an average titer of 70 units, all being over 50 units, whereas the anatoxin animals had an average of 18 units, none having reached 50 units.

TABLE I

COMPARISON OF TITERS OF SHEEP IMMUNIZED WITH TOXIN AND WITH ANATOXIN, UNITS PER C.C.

		Toxin Animals			
Sheep No.	Days	15	30	45	60
4		1/3	20	30	55
5		1/2	20	45	100
6		1/2	18	30	55
7		1/5	25	50	75
8		1/5	15	50	70
9		2	12	16	18
10		1/5	..	..	1½
11		1	4	14	22
12		12	18	18	18
13		16	20	38	38
14		2	..	..	7

To eliminate the possibility that this result might be due to a different immunologic response in the two groups, immunization was continued in both groups with a total of 400 c.c. of routine toxin under similar conditions. On the 150th day of immunization, the titers were measured, the results as compared with the titers at the 60th day being as shown in Table II.

It is apparent from this table that the lower titers of the anatoxin animals is not due to a difference in the response of the two groups. Following the use of toxin for immunization in both groups the average titer is 106 units for the anatoxin group and 117 units for the toxin group.

The results of the experiment prove clearly that anatoxin is far better for the beginning of immunization than the toxin. Immunity appears earlier and is higher, probably because with the atoxic anatoxin we are allowed to start the immunization with more antigenic units than with the toxin. In the beginning of

* Published through the kindness of Mr. Williamson of the Information Service of the Rockefeller Foundation.

TABLE II

COMPARISON OF ANTITOXIN TITERS OF SHEEP IMMUNIZED WITH DIPHTHERIA TOXIN FOLLOWING INITIAL IMMUNIZATION WITH (1) TOXIN AND (2) ANATOXIN

Sheep No.	Days	Toxin Group 60	150
4		55	100
5		100	85
6		55	110
7		75	175
8		70	*
9		18	70
10		1½	18
11		22	150
12		18	55
13		38	275
14		7	70

* Bled out during interval.

immunization far more antigenic units of qualitatively weaker antigen, anatoxin, give better results, but after 2 or 3 weeks fewer antigenic units of more potent antigen, toxin, prove to be a stronger immunizing agent.

The best immunizing scheme for the production of diphtheria antitoxin begins therefore with anatoxin injections and shifts to toxin after 2 to 3 weeks. Calculations and experience prove that a horse with 2 units of antitoxin per c.c. withstands the largest doses of the strongest toxin without any marked reaction. In replacing anatoxin by toxin, we do not lower the dose, but, in case the horse has at least 2 units of antitoxin, we inject as the first toxin dose the same amount of antigenic units as there were in the last anatoxin injection. We neglect the toxicity entirely, using no guinea pig titrations, and using 0.20 per cent formol as a preservative for the toxin. When a toxin shows itself to be a potent in antigenic units by the flocculation test we use it for the preparation of anatoxin. By starting the horses with strong anatoxin, we are able to bleed not later than the 30th day of immunization, and we reach far higher titers than before. The record of horse No. 39 given in Table III will serve as an illustration of our scheme of injections.

TABLE III

SCHEME FOR PRODUCTION OF ANTITOXIN IN HORSES

Day of immunization	Injected: Antigenic units	M.L.D.	c.c.	Units of antitoxin	Reaction
1	45	.....	5	....	38.0 C
3	90	.....	10	....	38.1
5	180	.....	20	....	37.9
7	450	.....	50	....	38.5
8	....	.....	...	3	....
9	900	.....	100	....	38.5
12	1350	.....	150	....	38.5
15	1800	.....	200	225	38.8
18	1800	80,000	200	....	38.8
22	2250	100,000	250	....	39.4
25	2700	120,000	300	....	38.5
31	....	.....	...	1600	....

REFERENCE

1. *Ann. de l'Inst. Pasteur*, 39:1, 1925.

THE PRESENT STATUS OF PROPHYLACTIC RABIES VACCINATION IN DOGS

DR. A. EICHHORN
Pearl River, New York

THE available data on the present status of rabies indicates a greater prevalence, especially in certain localities. Thus, while in former years an extensive occurrence was more or less limited to some of our southern states, more recently a widespread appearance has been observed in many of the eastern and middle western states. The positive reports from laboratories when compiled would furnish alarming figures, clearly indicating a consistent annual increase of this infection. Georgia[1] alone reports in 1924, 509 cases of rabies in animals and 2,569 persons for the antirabic treatment. In Florida,[2] 171 animals were affected, whereas in New Jersey and Massachusetts 243 and 274 cases were diagnosed respectively.

Most all mammals are susceptible to rabies. Dogs, cattle, horses, hogs, cats, sheep and goats are affected, but dogs most frequently. The transmission of the disease occurs principally through bites from infected animals or through the deposit of saliva on wounds or abraised surfaces. It is only natural that with the greater number of rabid cases in dogs a proportional increase of human exposures would follow. As a matter of fact, the records of laboratories supplying treatment demonstrate such an increase.

There is no doubt that the dog is the primary factor in the dissemination of the disease, and that the control of the infection in the dog would follow by a corresponding decrease of rabies in animals and men. Thus, the problem of eradication of rabies resolves itself in the successful elimination of the disease from dogs.

Control measures for the prevention of rabies

have been in existence ever since the most primitive fundamentals have been recognized in sanitary medicine. These measures consisted in restraining the dog through the inauguration of quarantine and muzzling from running at large in localities where the disease has been prevalent. As a matter of fact, even to-day in all civilized countries the sanitary laws provide such restrictions on dogs whenever the disease appears in a locality.

Unfortunately these measures have partly or entirely failed in eliminating the infection, due to the fact that the public is not in sympathy with them and therefore their enforcement is not carried out effectively. Whenever a quarantine and muzzling proclamation is issued, owners of dogs are prone to adopt for their pet animals muzzles which will interfere the least with their comforts. Thus, very few owners adopt effective muzzles. Besides there is always the stray animal which, roaming at large, is exposed to the disease, and in turn when infected transmits the disease to other dogs. The failure of these measures has been recognized by sanitary officials who in order to check the further spread of the disease have stimulated investigations for the development of other means for controlling rabies, preferably by vaccination.

The recognition of Pasteur's classical work which demonstrated the value of vaccination as the most effective means of preventing rabies, suggested the possibility of adopting a method for immunizing dogs against rabies. At the same time, it was recognized that such procedure must be simple in application and inexpensive in order to popularize it with the owners of dogs.

Some of the most significant work has been done in Japan. The progress of the disease in Japan in the early years during the war resulted in extensive experimentation on preventive vaccination, with the well known results through which Umeno and Doi[3] have conclusively proved in their large series of tests that it is possible to confer upon dogs a high resistance against rabies by inoculations with a single injection of rabies vaccine. Their experimental work has later been confirmed by the actual application of the vaccination in practice until at the present time hundreds of thousands of dogs are being vaccinated in Japan with very effective results. The statistical data published by Hata,[4] a well known authority of Japan, on more than 100,000 vaccinations would convince even the skeptics of the value of this procedure. Hata reports the vaccinations of 104,629 dogs against rabies in Tokio and Yokohama and their environs. Only 41 out of the inoculated dogs developed rabies, while 1,699 of the uninoculated group, which represented only one-third of the total number of vaccinated dogs, developed rabies. It is further stated that out of the 41 vaccinated dogs which developed rabies, a large percentage were exposed to the disease before the vaccination was undertaken.

The prophylactic vaccination of dogs consists of a single injection of phenolized fixed virus, which confers upon the animals an immunity lasting 1 year. It is prepared by collecting and grinding the brain and spinal cord of a rabbit or preferably of a dog in which rabies developed in 7 days from the injection of fixed virus. To this material is added 4 times its volume of phenolized glycerin water. The glycerin water consists of 60 parts of glycerin to 40 parts of water containing 1.25 per cent phenol. This mixture is then placed in the incubator for a period of 3 days. Thus, each cubic centimeter of the vaccine contains 0.2 g. of the brain material. Therefore, each dose of 5 c.c., which has been established as the necessary quantity for immunization, contains 1 g. of the brain material containing the fixed virus. The success of the vaccination depends upon a standardized dosage of virus to insure the required amount of virus for each dose of vaccine.

The experimental results of the Japanese were confirmed in the United States by Eichhorn and Lyon,[5] Reichel,[6] Schlingman,[7] in Austria by Schnurer[8] and more recently by Professor Kurt Schern[9] of Montevideo, Uruguay. In this connection it is of interest that the government of Uruguay has charged the Bacteriological Institute of that country with the preparation of such vaccine, and presented a bill in Parliament requiring compulsory vaccination of the dogs against rabies in order to protect the inhabitants from the disease.

The practical application of the prophylactic vaccination of dogs has been in vogue in the United States for over 3 years. It can be safely stated that during that time at least one-half million dogs have been vaccinated. It is unfortunate that no statistical data is available in the United States on the results of the vaccination. However, in localities where compulsory vaccination has been adopted, accurate data on the vaccinated dogs are obtainable, because such an ordinance always provides that the vaccinated dogs shall be properly tagged. The reports from such municipalities appear

to have conclusively established the value of vaccination in the control of rabies, inasmuch as among the vaccinated dogs no rabies developed; whereas in dogs which were not vaccinated rabies has been established. In a recent address on "The Experience with Canine Antirabies Vaccine," by John V. Mulcahy,[1] Chief of the Bureau of Bacteriology, State Department of Health of New Jersey, considerable data are furnished on the results of vaccinations. In this address the results of compulsory vaccinations in various municipalities are recorded and they appear to prove conclusively the possibility of controlling the disease by such means.

Recently in a publication, Dr. Schoening of the United States Bureau of Animal Industry, Washington, D. C., suggested that in his experiments he had met a strain of virus against which the vaccinations did not protect. While the experimental data furnished by Dr. Schoening would suggest the possibility of the existence of different strains of rabies virus, on the other hand the results from the vaccination of exposed human beings would tend to contradict the probabilities. The fact that only one strain of fixed virus is used practically throughout the United States in the preparation of the vaccines which are successful in the treatment of rabies in man, is sufficient evidence that the fixed virus is effective against the strains of virus prevalent in the United States. If strains of street virus exist in the United States against which the fixed virus used in the preparation of the vaccines are not effective, then the number of failures from the vaccination of man would be far greater than actually occur. It is a well known fact that the number of cases of rabies in treated persons is somewhat less than 0.5 per cent which surely is sufficient proof of the effectiveness of the method. Therefore, there should be no anxiety about the existence of strains against which the vaccination of dogs might not be effective.

The prophylactic vaccination of dogs requiring only a single injection is a safe procedure and does not in any way endanger the health of the animal. While isolated cases showing abscesses at the point of inoculation have been reported, they are very few and far between and should not be considered as a factor in the success of the procedure. Likewise, in rare cases the development of posterior paralysis has been observed, but the cases which may be actually charged to the vaccination would not be greater in number than those following the administration of the antirabic treatment in man.

With the extensive use of the prophylactic vaccination against rabies now practiced throughout the United States, it will soon be possible to conclusively establish the value of this procedure. Inasmuch as it is of the greatest importance that each case of rabies reported in vaccinated animals be accurately diagnosed, microscopic examinations and test inoculations are indicated. By following this method the data collected will definitely prove whether a suspected case in a vaccinated animal was actually a case of rabies or some other condition. We cannot lose sight of the fact that dogs are frequently destroyed, when as a matter of fact, they only present some symptoms suggestive of rabies.

While there is no doubt that vaccination offers the most effective means of controlling and eradicating rabies, experience has shown that wherever efforts have been made to inaugurate compulsory vaccination, organized opposition invariably followed, and in many instances defeated such measures. Such activities, however, are not at all surprising, for most innovations and improvements destined for the control of infectious diseases have aroused opposition which was overcome only through education and repeated demonstrations of the value of the control measures.

We all recall the advent of diphtheria antitoxin. There were many who wrote and expressed themselves against the injection of diphtheria antitoxin. Now nearly everyone is convinced of the value of this splendid preventive and curative product. Similar opposition no doubt will be met in regard to rabies vaccination. Such opposition, however, can readily be combated by education and sound arguments. Therefore, the efforts of interested parties should be to popularize the vaccination of dogs. In most instances where public sentiment is aroused on account of the existence of the disease, the efforts to enact ordinances for compulsory vaccination were met with success, so that ordinances are in operation at the present time in many municipalities in various states.

From the available results, it is evident that with the aid of vaccination it will be possible to reduce the number of cases of rabies and by systematic enforcement eventually eradicate the disease. The eradication of rabies in dogs would naturally eliminate the principal source of transmission to man. Therefore, the advan-

tages of protective vaccination against rabies in dogs is of great importance not only for economic reasons and veterinary regulations, but even more so for public health control.

REFERENCES

1. Mulcahy, John V. Experience with Canine Anti-Rabies Vaccine. *Pub. Health News,* XI, 1:7–19 (Dec.), 1925.
2. *Ibid.*
3. Umeno and Doi. A Study of the Antirabic Inoculation of Dogs and the Results of Its Practical Application. *Kitasato Archives of Experimental Medicine,* IV, 2:89–108 (Mar.), 1921.
4. Hata, S. The Protection of Dogs Against Rabies by Umeno's Method of Preventive Inoculation. *J. Immunol.,* IX, 3:89, 1924.
5. Eichhorn, A., and Lyon, B. M. Prophylactic Vaccination of Dogs Against Rabies. *J. Am. Vet. Med. Assn.,* N. S. 14, LXI:38, 1922.
6. Reichel, John. Rabies Vaccine Canine, Single Dose Treatment. *J. Am. Vet. Med. Assn.,* N. S. 16, LXIII:83, 1923.
7. Schlingman, A. D. Prophylactic Immunization of Dogs Against Rabies by a Single Injection of a Dead Virus Vaccine. *J. Am. Vet. Med. Assn.,* LXVIII. 3:299–305, 1925.
8. Schnurer, Joseph. Wutschutzimpfung bie Hunden (Prophylactic Vaccination in Dogs). *Wien Tierarztliche Monatsschrift,* 1925.
9. Schern, Kurt. Schutzimpfung gegen Wut (Immunization Against Rabies). *Berl. Tierarztliche Wchnschr.,* XXXII, 1926.
10. Schoening, Harry W. Studies on the Single Injection Method of Vaccination as a Prophylactic Against Rabies in Dogs. *J. Agri. Res.,* XXX, 5 (March 1), 1925.

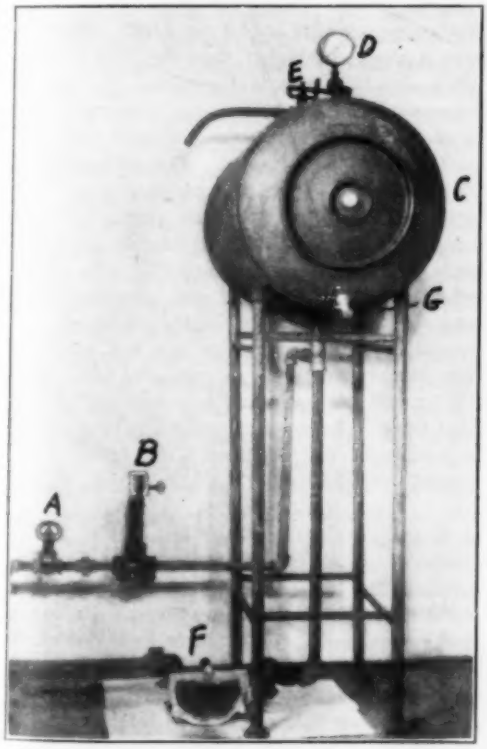
AUXILIARY APPARATUS FOR THE AUTOCLAVE

C. J. MILLAR

School of Mines and Metallurgy, University of Missouri, Rolla, Mo.

IN an effort to devise an autoclave that would uniform sterilization and at the same time be as nearly "fool proof" as possible, we have added the auxiliary apparatus shown here.

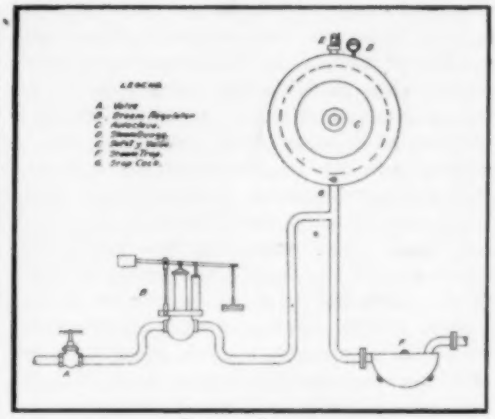
FIGURE I



AUXILIARY APPARATUS FOR THE AUTOCLAVE

Steam is supplied from the central power house through the valve *A* (see cut), to the regulator *B*, which automatically regulates the steam to any desired pressure. The safety

FIGURE II



PLAN OF LAYOUT

valve *E* on the autoclave is adjusted to the same pressure as the regulator, in case the regulator does not control the steam pressure exactly. The steam gauge *D* gives an additional check on the pressure. The steam trap *F* takes care of the condensation so that the steam for sterilization is relatively dry.

In the operation of this autoclave all that is necessary is to place the media in the autoclave *C*, open the valve *A* for the desired length of time, close the valve *A*, release the pressure slowly by means of the stopcock *G* and take the media out. There is a small hole drilled

in the stop cock *G* to automatically release any entrapped air.

The above combination of auxiliary apparatus may be modified to suit the needs of each laboratory.

SUMMARY

One valve controls the autoclave. The automatic steam regulator insures uniform steam pressure without waste of steam. The small vent in the air release cock insures the removal of all entrapped air. The steam trap removes all condensation so that there is no danger of the media being spoiled by flooding the autoclave.

BIBLIOGRAPHY

Benton and Leighton. *J. Infect. Dis.*, 1925, p. 353.
Hasseltine, H. E. *Pub. Health Rep.* No. 32, 1917.
Shaw and Levine. *J. Bact.*, 1924, p. 225.
Shaw, F. W. *Ibid.*, 1924, p. 315.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

VITAL STATISTICS IN 1925

New Haven—The standing of New Haven as regards health for 1925 is most satisfactory when the infant mortality rate and the death rate are surveyed. The death rate was 12.1 as compared with 12.2 in 1924. The infant mortality was 56.4 for 1925 as compared with 63 for 1924, exclusive of non-residents. In common with most of the larger cities in this country there has been a falling off in the number of births. In 1924 there were 4,009 births, while in 1925 there were only 3,811. New low records have been established in 1925 for several diseases. The pulmonary tuberculosis death rate of 53 per 100,000 is better than any previous year. Only 3 persons died from typhoid, which is 5 less than any year on record. The outstanding low rate from diphtheria, 1.7, has again been equalled in 1925. While substantial gains are being made in the control of the acute communicable diseases, very little comparable progress is being made with the chief causes of death, heart disease, pneumonia, apoplexy and cancer. It is encouraging to note that New Haven was one of the few cities that during the year reduced its fatalities from motor vehicle accidents.—New Haven *Health*, Feb., 1926.

Minnesota—While the death rate from tuberculosis and cancer is showing a decline in Minnesota, heart disease is taking more lives than ever before and now has the highest death rate in the state. The death rate from heart disease was 141.5 per 100,000 population, from cancer, 94.7; from pneumonia, 71.2; from tuberculosis, 61.9, and from external causes, 63.9. Cancer fatalities in 1925 showed the first actual decrease in the total number since 1921. The death rate from tuberculosis has been reduced from 101.5 in 1915 to 61.86 in 1925. The ever increasing demands of modern business life upon the human system may be responsible for the great increase in heart disease fatalities. —*Minneapolis Tribune*, Mar. 20, 1926.

New Jersey—The New Jersey provisional death rate for 1925 is 11.9 per 1,000. Although this is about 0.1 higher than the 1924 rate of 11.77, the 1925 rate is favorable. A slightly increased death rate from the extremely low figure which followed the influenza epidemic in 1918 is to be expected. The birth rate of 21.1 showed a decline of more than 4 per cent from the rate of the previous year. The rate has been decreasing almost steadily since the peak, 24.98, was reached in 1917. To partly offset the declining birth and marriage rates and the slight increase in the death rate, a record low infant mortality rate was achieved. The 1925 rate was 69, as compared with 70 in 1924 and is the equivalent to a saving of 74 infant lives. The maternal mortality rate was 6, a needlessly high figure.—*New Jersey Pub. Health News*, 11:110–111 (Mar.), 1926.

Wisconsin—During 1925 a total of 28,887 deaths from all causes was reported in Wisconsin. The tentative death rate was 10.37 per 1,000, which is slightly lower than the average for recent years. The diphtheria deaths in 1925 were 151 and were the fewest in the state's history. The deaths from scarlet fever, 102, were less than half of the 1924 total, and were by far the least since records have been kept. The tuberculosis total, 1,657, also is the low

record for that disease. With the splendid record for these 3 diseases and typhoid fever as well, there were 131 deaths from smallpox, giving one of the highest death rates from smallpox in many years. The largest previous year's deaths from smallpox in the last decade were 15 in 1921. The average for the 9 years preceding 1925 was less than 7 a year.—*Chicago Tribune*, Mar. 29, 1926.

Cancer in Massachusetts—In compliance with a legislative resolve, the Departments of Public Health and Public Welfare made an investigation in the summer and fall of 1925 on the cancer situation in Massachusetts.

The statistical study showed that cancer of all forms and of all ages over 30 has been on the increase in Massachusetts since 1850 and is still increasing, but that there are indications that the peak of the cancer curve may be nearly reached. Massachusetts has the highest death rate from cancer of any state in the registration area, when proper adjustments are made for age and sex. The average adjusted rate from cancer for 1920, 1921 and 1922 for Massachusetts was 98.4 per 100,000. The rate increases from west to east in the state and increases with density up to a population of about 4,000 per square mile. From there it remains nearly stationary. The proportionate mortality for cancer among inmates of almshouses and insane institutions is lower than among the general population of the same age distribution. The average patient comes to a doctor 8 months after first noticing symptoms and the average duration from onset to operation is 10.3 months. The average duration of life for operated cancer cases which die of cancer is 22.8 months and for non-operated cases 20.0. About one-fourth of all cancer deaths occur in hospitals, but the length of stay in hospitals is too short to be considered adequate. The hospitals are increasing their share of the cancer load. There is a need for additional beds for cancer cases as well as for all chronic diseases. Further education of the public as to early diagnosis and treatment is necessary.—John H. Nichols and others on the Committee, *Boston M. & S. J.*, 194:388–393 (Mar. 4), 1926.

Cancer Statistics. Cancer and Diet—There is practically no cancer of the internal organs in natives of the torrid zone who live on a mild unspiced diet. When, however, any uncivilized peoples become civilized and adopt the European mode of living their cancer death rate becomes normal.

If the standardized cancer death rate from age 35 on is studied from 1880 to 1921, it will be seen that (1) for both males and females in Copenhagen there is a great increase up to 1911 succeeded by a decrease during the last 5 to 10 years, (2) the male cancer death rate in Copenhagen is much higher than that in provincial towns, (3) women have a far lower cancer death rate than men in Copenhagen, if cancer of the female organs be excepted. The following facts may have some bearing on this question. During the last 50 years the population has increasingly turned from vegetable to animal foodstuffs, and only in the last 10 or 15 years has the intense agitation against the prevalent overfeeding begun to turn the tide the other way. During the time of rationing, 1917–1919, the number of pigs was reduced one-fifth and since then the country has not gone back to the former rich protein diet.

If the English cancer death rates for males during 1910–1912 be tabulated according to occupation, it will be seen that among these professions the members of which indulge in abundant food and alcoholic drink, the cancer death rate is the highest.

From all the data it would seem that there is a probability of the main causes of cancer being (1) irritation of the digestive tube from decayed, strongly salted and spiced nutrients, alcoholic drinks and tobacco, (2) overnourishment most frequently caused by a too varied, too savory food, (3) a food too rich in animal protein.—M. Hindhede, *Pub. Health*, 39:167–173 (Mar.), 1926.

Health Conditions in Sierra Leone, 1924—The population of the Protectorate of Sierra Leone was 1,456,148 in 1921, composed of various tribes. The number of European residents during 1924 in the colony and protectorate was 198 officials, 486 military, and 420 non-officials (including white Americans). There was a marked reduction in the incidence of dysentery in Freetown, only 42 cases being reported as against 138 in 1923. Tuberculosis appears to be increasing. Two cases of smallpox were reported in Freetown and there were 10 cases in the protectorate. Chickenpox was fairly frequent both in the colony and in the protectorate; there were no cases of diphtheria, influenza, or cerebrospinal meningitis. The capital, Freetown, enjoys a splendid pipe-borne water supply. This and other equally important sanitary

improvements have done much towards dispelling the evil reputation from which the city has long suffered. The climate of Sierra Leone is tropical with a heavy rainfall and high atmospheric humidity the greater part of the year.—*Lancet*, 1:321–322 (Feb. 6), 1926.

The Results of Infant Welfare Work—In order to refute the suggestion, often heard, that the reduction of infant mortality tends merely to postpone the deaths of feeble and degenerate infants from the first year to a slightly later period, thus prolonging the suffering of the child and increasing the burden of those responsible for it, Professor F. E. Wynne has prepared 2 tables in reference to infant mortality in Sheffield, England. The first table shows the infant mortality rate, the mortality rate from 1 to 5 years, and the general death rate in Sheffield for each 5th year from 1897 to 1922 and for 1924. While the infant mortality rate for 1924 has fallen to 46 per cent of that for 1897, the death rate for the age period 1 to 5 years has also fallen to 47 per cent of that for 1897 and the general death rate 55 per cent.

The second table compares the infant death rate from 3 principal groups of causes in 1924 and in 1901. The first group comprises the death rate from prematurity, debility, etc., that is, congenital causes. This group consists almost entirely of the deaths of weakly or degenerate infants with a bad heredity, whose elimination from the racial point of view, is desirable. The other 2 groups comprise deaths from diarrheal and respiratory diseases, in both of which cases there is a much lower correlation with hereditary influences. Notwithstanding a reduction in the total mortality of 55 per cent (from 202 in 1901 to 90 in 1924), the proportion of deaths due to congenital causes has actually increased from 39 to 46 per cent of the total mortality. These facts absolve us from the charge of causing deterioration of the race by improving the environment of the child. —*Med. Off.*, 35:89 (Feb. 27), 1926.

Age Distribution of Cases of Communicable Disease in Detroit—Whereas it is often said that the ordinary communicable diseases are principally school diseases, in reality preschool children are affected to a far greater extent than school children. A summary of 40,000 cases of communicable diseases during 1923, 1924 and 1925 has been made which substantiates this statement. Of 8,503 cases of measles 62.8 per cent occurred in children under 7 and 36.4 per cent in children under 5. Of 7,640 cases of whooping cough 87.1 per cent occurred in children under 7 and 65.5 per cent in children under 5. Of 11,525 cases of scarlet fever 41.29 per cent occurred in children under 7 and 22.8 per cent under 5. Finally, of 5,988 cases of diphtheria 45.19 per cent occurred in children under 7 and 36.30 per cent under 5 years of age. Scarlet fever seems to be the only disease which has as high an incidence among school children as it does in the preschool group (38.16 per cent for school children as compared with 41.29 per cent), although diphtheria closely approaches it (27.25 per cent as compared with 45.19 per cent). —*Detroit Weekly Health Rev.* (Mar. 20), 1926.

Public Health in St. Vincent, 1924—The general health of St. Vincent throughout 1924 was good. The total population on December 31 was 47,591. The birth rate for the year was 37.72 and the death rate 16.49 as compared with 22.1 in 1923. Thirty cases of enteric fever occurred with 10 deaths. Infant mortality was 99 in 1924 as against 128. Illegitimate births amounted to over 75 per cent of all the births, and out of 93 stillbirths 79 were illegitimate. The campaign against yaws was continued with success, a total of 2,377 cases being treated, of which 1,813 were cured. St. Vincent is one of the healthiest of all the West Indian islands. —*Lancet*, 1:266 (Jan. 30), 1926.

Health Conditions in Jamaica, 1924—The estimated population of Jamaica for 1924 is 904,405. The birth rate in 1924 was 36.8 as compared with 38.2 in 1923 and the death rate 21.7 in 1924 as compared with 22.7 in 1923. In Kingston, the capital, the principal causes of death per 100 of total deaths were: diarrhea and enteritis, 10.3; atrophy, icterus, and scleroma of the newborn, 11.6; phthisis, 10.7; enteric fever, 5.8; pneumonia, 5.8; heart disease, 6.7; chronic Bright's disease, 4.1; cerebral hemorrhage and apoplexy, 3.1. During the year the International Health Board pursued their campaign of hookworm eradication. Alastrim continued to exist in the island, but the incidence of the disease decreased to such an extent that the number of cases reported in the last quarter was the smallest since the outbreak started. The advent of rains in the latter part of the

year caused local epidemics of malaria.—*Lancet*, 1:322 (Feb. 6), 1926.

A Statistical Study of Tuberculosis in Nova Scotia—There has been a gratifying reduction in the losses from tuberculosis during the period 1909 to 1924 in Nova Scotia, particularly pulmonary tuberculosis. Considering the different forms of disease separately and in shorter age periods, it is seen that for the age group 0–5 there has been a marked decline, especially in pulmonary tuberculosis, the drop in rate being from 80 per 100,000 to nearly 20. For ages 5 to 9 and 10 to 14, however, there has been little change in either the pulmonary or the other forms of tuberculosis. In the age groups 15–19, 20–29, 30–39 and 40–49, the sanatorium age groups, there have been marked changes for the better, the rate in the first being halved, but only in so far as pulmonary disease is concerned. The rate of the non-pulmonary deaths keeps along practically level or, as in the 20–29 and 30–39 groups, actually appears to be rising. During the years 50–59, 60–69 and 70 and over, not so much improvement is to be seen. Especially is this true in the 60–69 age group, which indicates but a very slight alteration and that confined almost wholly to the pulmonary form of the disease.

The improvement in pulmonary tuberculosis has apparently been more marked in the rural communities than in the urban. In the first half of the period the rural deaths were higher, in the second half urban deaths. For non-pulmonary tuberculosis the urban death rate is consistently higher. There has been greater improvement in female death rates than in male. In some age groups, particularly 15–19 and 20–29, the improvement in the death rate is not keeping pace with the general improvement shown for all causes of death. Deaths from tuberculosis still equal 10 per cent of all deaths, a percentage much higher than necessary. Nearly one-half of the persons who died in age group 20–29 died of tuberculosis.—*Nova Scotia Dept. of Pub. Health Pamphlet.*

Public Health in Grenada, 1924—The estimated population in Grenada at the end of 1924 was 68,957. The birth rate for the year was 31.9 and the death rate 16.8, the latter comparing very favorably with that in other West Indian colonies. The infant mortality rate was 111.0. The principal causes of death during the year were: diarrhea and enteritis, 296; malaria, 108; enteric fever, 22; dysentery, 34; pulmonary tuberculosis, 52; and syphilis, 16. Grenada, in the extreme south of the Caribbean Sea, is the nearest British island to the mainland of South America, with the exception of Trinidad and Tobago. The climate can be considered excellent and from December to May is delightful. The range of temperature is small.—*Lancet*, 1:266 (Jan. 30), 1926.

Public Health on the Gold Coast, 1924—The population of the Gold Coast and its dependencies at the last census was 2,299,961. The number of Europeans resident in the colony in 1924 was 3,043. The death rate among the Europeans was 7.88 and the invaliding rate 28.59. The 10 deaths among European officials were due: 2 to yellow fever, 2 to black-water fever, 3 to heart failure and 1 each to chronic myocarditis, rupture of thoracic aneurysm and cerebral embolism. Of the 14 deaths among European non-officials 8 were due to yellow fever and 2 to black-water fever. Treatment was given in 5,963 cases of malaria, 551 of dysentery, 534 of pneumonia, 411 of tuberculosis, 44 of plague, 2 of smallpox and 6 of sleeping sickness. The efforts of the medical authorities in promoting the knowledge of hygiene continue to exercise a beneficial effect on the general health of Europeans. The climate, though hot and damp, is cooler than that of most tropical countries situated in the same latitude. It is not in itself unhealthy, but an evil reputation has been earned for it in the past by the prevalence of mosquito-borne diseases against which all possible precautions have constantly to be taken.—*Lancet*, 1:266 (Jan. 30), 1926.

INDUSTRIAL HYGIENE

DR. EMERY R. HAYHURST *

Methods of Investigating Ventilation and Its Effects—The authors designed a "hot-wire" anemometer to measure rapid oscillations of air velocity, which are always present in factories and other rooms, the apparatus being calibrated against a kata-thermometer. Also a thermopile was designed to measure rapid oscillations of air temperature, this being connected to a galvanometer. It was found that the kata is quite unreliable for measuring descending currents but that the hot-wire anemometer indicates about two-thirds the theoretical velocity.

The sensations of persons were recorded under different conditions of air movement, temperature, etc. It was found that the various degrees of "stagnancy" experienced in factory air were due entirely to differences in the air temperature, while the various degrees of "freshness" were due chiefly to differences in air velocity. The kata-thermometer combines these two variables better than any other known measure. However, a considerable allowance has to be made for acclimatization; *e.g.*, a cooling power of 6 is reasonable during mild weather, one of 5 may be equally reasonable during hot weather, and one of 7 during cold weather. Sensations of air movement are increased by increasing the oscillations of air velocity. No clear proof was obtained that oscillation of temperature increases the sensation of air movement. "The air velocity is only slightly increased by turning on the plenum ventilation in factories, whilst the oscillations in velocity are slightly diminished. Intermittent ventilation considerably increases the oscillations in velocity." "The effect of clothing on the cooling rate of the body is considerable. Thus it was calculated that the unclothed body of the subject of experiment would remain in temperature equilibrium at an air temperature of 81°–83°, whilst the warmly clad body would remain in equilibrium at 59°–60°. Hence, in order to induce an actual cooling of the overheated body of a man engaged in hot and heavy work, it is of most importance to reduce the temperature, and next in importance to reduce the clothing, whilst an increase of air velocity has but little effect."—H. M. Vernon and Others, Med. Res. Coun. (British), *Special Report Series, No. 100*, H. M. Stationery Office, London, W. C. 2. (1926).

Silicosis—A Résumé of the Literature—This bulletin is submitted for the convenience of physicians, anticipating legislation in the near future for compensation to workers in industry suffering from silicosis. "Silicosis has been the cause of a number of deaths among certain groups of industrial workers, and no doubt has been unrecognized and entered as fibroid phthisis, pulmonary tuberculosis, and bronchitis." "There seems to be ample evidence that as a result of a careful study of silicosis the number of cases to be so diagnosed will increase." Only those references are given in detail which are likely to be of assistance to the general practitioner.

The bulletin, however, is complete in itself without necessitating the practitioner's looking up specific references further, as a rule. All of the usual headings are included with pertinent abstracts from carefully chosen sources, from "Definition" to "Prognosis" and "Industrial Uses of Silica." The first 20 pages comprise a short synopsis of the whole subject, the next 35 being an appendix of abstracts and the last 13, a bibliography and index.—Robert S. McBirney, N. Y. Dept. of Labor, Bur. of Ind. Hygiene, 124 E. 28th St., New York City (1925).

Silicosis—A Study of Fifteen Cases in New York—This is another bulletin upon case studies of silicosis from the standpoint of compensation which the Bureau of Industrial Hygiene has prepared in the last 2 years, the first one being a detailed presentation with illustrations of 3 cases of the disease. The present bulletin takes up the relationship of silicosis to tuberculosis, the industries concerned, whether the affliction is truly oc-

cupational, the length of time it takes to acquire the affliction, its curability, etc. The protocols (summarized) of 15 carefully studied cases are next presented with illustrations of X-ray findings, a report of laboratory findings, and a final short chapter on conclusions and discussions. The whole makes a compact bulletin of 29 pages of very practical use to physicians and others interested in either the disease or the compensation question.—Prepared by May R. Mayers, N. Y. Dept. of Labor, Bur. of Ind. Hyg., New York City (1926).

Silicosis and Compensation—"A foreman in an emery grinding room who contracts bronchial trouble as a result of inhalation of dust over a long period of time does not sustain an injury in the course of employment and his disability is not included in the Occupational Disease Act.—O.D. 2,788—Perle Hedges, Columbus, O."—Industrial Relations *Bulletin*, Vol. III, No. 3, Ohio Ind. Commission, Columbus, Mar., 1926.

Regulations for Tetraethyl Lead Gas—Tentative regulations governing the manufacture, distribution, and use of tetraethyl lead gas and suggestions for regulations covering the sanitation of garages have been submitted by Surgeon General Cumming, of the United States Public Health Service, to the health officers of the various states for their consideration, comment and criticism. "Of far more importance to industrial workers than the control of the manufacture of tetraethyl lead is the suggestion for regulations covering the sanitation of garages. During the recent investigations of the U. S. Public Health Service of the possible health hazard from the use of tetraethyl lead gasoline, it was found that lead was present in the dust of ordinary garages, and in one instance it formed as much as 1 per cent of the total inorganic matter. When one considers that there are hundreds of thousands of garage workers, the extent and well-nigh universal distribution of this health hazard is at once apparent, and the necessity for sanitary regulation obvious."—*Health News*, U. S. Pub. Health Service, Washington, D. C., Mar., 1926.

Laboratory for Standardizing Gas Appliances—The American Gas Association established a testing laboratory in Cleveland, on June 1, 1925, for the purpose of safeguarding the purchaser of gas appliances in the matter of hazardous devices. Requirements for an apparatus or device are first prepared by a group of sub-committees composed of representatives of the gas companies, appliance manufacturers, the U. S. Bur. of Standards, U. S. Bur. of Mines, and U. S. Public Health Service. Before they become effective they must be approved by a general committee, referred to the gas and manufacturing companies for criticism and then returned to the original committee for final revision. The laboratory has recently approved various types of flexible gas tubing and submits a list of same including the manufacturers' names. It was found that plain rubber tubing, fabric coated with rubber, and spiral metal tubing packed with rubber did not meet the A.G.A. requirements and that such material is apt to be particularly dangerous. Gas tubing should not be used after it has been in storage more than one year. Cheap tubing sold by many department stores should be discontinued. All approved tubing will be identified by the American Gas Association's official marking seal, which gives the year of manufacture. There are roughly 2,000 gas companies in the United States. It is difficult to find two gases possessing exactly the same constituents. Also changes in pressure, specific gravity, and heat content, all have a decided influence on the operation and particularly on the safety of any gas appliance. On February 15, 1926, approval tests began on gas ranges and it is hoped to have a list of approved types available by May 1. Gas heating stoves (space heaters) are at present being investigated. It is hoped that dealers and companies will in the future handle only the approved types, at the same time educating customers to this point of view. The statement cannot be construed, however, that all hazards will be forever removed, as reasonable care on the part of a customer is presupposed.—R. M. Conner, *National Safety News*, Apr., 1926, p. 19.

Chronic Copper Poisoning—"Evidence is slowly but steadily accumulating in favor of the view that chronic poisoning with copper causes the symptom complex known under the different names of hemochromatosis, bronzed diabetes and pigment cirrhosis.

"Copper is an exceedingly useful and indispensable metal in many ways but it should not be employed where it may come in contact with foods or drinks, especially if they contain acids of any sort, because it is so readily dissolved by many of them. This would exclude its use

for cooking utensils of any sort, for shakers of cocktails and acid drinks, and for the worms of the condensers in stills.

"Its use in pipes for drinking water and for hot water heaters is probably without danger." —F. B. Mallory, *Arch. Int. Med.*, 37, 3:336 (Mar. 15), 1926.

Lead Anemia—The Bureau of Industrial Hygiene has been making a study of the health status of some 400 odd lead workers in the State of New York. Only men were included who were at work. The relative prevalence of various types of blood changes found in 238 lead workers showed percentages as follows: Anemic red blood cells, 71; anisocytosis, 44; polychromatophilia, 40; stippling, 39; poikytocytosis, 23; nucleated red blood cells, 8; eosin myelocytes, 2; other abnormal cells, 1. The author's conclusions are given in full below:

1. The 381 cases herein described include no cases of acute lead poisoning. The blood changes are those which have been found to occur in lead workers who do not consider that they are ill.

2. Lead anemia is a blood disease entity having the following diagnostic features:

(a) The red blood cell count and hemoglobin are only slightly reduced in all but severe cases, giving the appearance of a very low grade secondary anemia.

(b) The color index is in the average case only a little less than one, although it gets lower as the red cell count and the hemoglobin are reduced.

(c) This apparently low grade anemia is associated with changes in the morphology of the red cells, which is out of all proportion to what would be found in the ordinary case of secondary anemia of the same severity. Of these blood changes stippling stands fourth in frequency, having been demonstrated in 39 per cent of the cases showing blood changes and 24 per cent of the total cases.

(d) Stippling of the red cells, though more prevalent in this anemia than in other sceondary anemias, is only one of a number of pathological blood changes, and must be considered in conjunction with the rest of the blood picture if its true significance is to be appreciated.

(e) Stippling and polychromatophilia occur in approximately the same percentage of cases, though they frequently occur one without the other.

(f) The white cell count is normal, but there is a slight relative lymphocytosis at the expense of the polymorphonuclear leukocytes. The average lymphocyte count was found to be 39 per cent.

(g) The mononuclear cell count was found to be somewhat increased, the average for the series being 6 per cent.

(h) An ashen pallor characteristic of lead poisoning appears to have no definite relation to the red cell count, the hemoglobin content of the blood, or the severity of the intoxication, but appears to be due to some neurovascular capillary disturbance.

3. The diagnosis of lead anemia must depend upon a careful examination of the whole blood picture. It is desirable that here, as in the other anemias, more than one slide be examined since many of these cells, particularly stippling, appear in the circulation only intermittently.

It is hoped and believed that the recognition of lead anemia as an entity, of which stippling is only one of many factors, should materially assist in increasing the value of the blood findings for the diagnosis of lead poisoning. Whether lead anemia without clinical manifestations, and lead poisoning from the compensation standpoint should be regarded as identical is a question which is outside the province of the present discussion. But surely in those numerous cases which are so troublesome to the compensation courts, where the symptoms complained of by the worker are so vague as to bear none of the definite earmarks of lead poisoning, the blood picture should be of material assistance. For example, if a worker is incapacitated from work because of headaches, dizziness, or loss of appetite—all of which might be due to a thousand and one causes other than exposure to lead—the finding of a typical lead anemia—either with or without stippling—should clinch the diagnosis. Undoubtedly there will be cases where, even with the entire blood picture at hand, the diagnosis will still remain in doubt. But on the whole it is to be expected that the whole blood picture will give considerably more valuable information than would the mere fact of the presence or absence of stippled cells.—May R. Mayers, *Proc. 9th Annual New York State Indust. Safety Congress*, N. Y. State Dept. of Labor, Albany (Dec.), 1925, pp. 222-231.

Silicosis Among Miners—This special bulletin of 23 pages with the addition of 10 plates showing silica dust, radiograms, and laboratory apparatus, discusses early investigations of silicosis throughout the world, its

prevalence and the conditions promoting it. The effects of rock dust on the lungs, the stages of the disease, the methods of determining dust in the air, and the methods of protection against the dust are detailed. Silicosis is also known as "miners' phthisis" or "miners' consumption." The disease, found especially among metal miners, is due to breathing very fine rock dust of high silica content, which dust is somewhat soluble in the body fluids, thereby supporting the theory that its effects are due to its poisonous action, although the sharp edged particles are held by some physicians as a chief factor of damage. The shortest period of exposure is 2½ years and the average exposure 7½ years before the disease develops. The author describes three stages: (1) Symptoms and signs but no incapacity for work; (2) definite signs with partial incapacity for work; and (3) specific signs which are or have been present, but the capacity for work seriously and permanently impaired. "The cardinal symptom of silicosis is shortness of breath, especially on exertion. The cardinal sign is diminished expansion of the chest. Both are slight in the early stages and increase gradually with development of the disease. Other symptoms and signs, as coughing, frequent colds, pains in the chest, and X-ray findings are very important in making a diagnosis." "Men having silicosis are more susceptible to tuberculosis than normal men." "Men with silicosis can improve in suitable surroundings to recovery in the first stage, can improve materially in the second stage, and somewhat in the third stage."—R. R. Sayers, U. S. Bur. of Mines, *Tech. Paper 372*, 1925 (Washington, D. C.).

Industrial Dermatoses—These afflictions cause great loss of time as well as a marked lessening of the workman's productivity. Cole and Driver conclude that quite one-fifth of all skin diseases result from occupational hazards. R. Prosser White estimates that 18,750 cases of occupational eczema occur annually in England alone. The Ohio State Department of Health report for 1921–1923 states that of 3,267 occupational diseases recorded, 2,197 were designated as "dermatitis." The causal factors lie both in the physical characters of the workplace and the physiological characteristics of the individual worker. Very frequently, following an initial occurrence of a dermatosis, the individual becomes hyper-susceptible to the causal hazards. Statistics seem to show that those who have oily or moist skins are most susceptible. An industrial dermatosis as a rule begins on the hands and then spreads to the arms, face and neck. They usually begin suddenly, have a rapid course, and show a sharply outlined area with many types of lesions. The author believes that one variety of ring worm—called epidermophyton—is constantly mistaken for an industrial dermatosis and that 80 per cent of refractory cases of occupational dermatosis are due to this organism. The infection is worse in summer months, in high temperatures, and persists after removal of the patient from the occupational hazard so that dermatologists are taking the stand that all eczema-like skin lesions of the hands and feet are to be considered epidermophytosis until proved not to be. The feet are very frequently involved also. The organism is easy to find by placing a skin scraping under the microscope, as is the usual method for identifying the spores and mycelial threads of ring worm. Another condition to be differentiated is the "feigned" eruption in which a deliberate malingerer or a psychopath keeps up the irritation by self-mutilation. Yet some cases once started may be kept up on a purely nervous basis. These artificial eruptions are usually on skin areas readily accessible to the right hand, and are usually peculiarly shaped with sharp borders and angular or linear markings due to some instrument or agent.—G. W. Wende, *Proc. 9th Annual N. Y. State Indust. Safety Congress*, N. Y. State Dept. of Labor, Albany (Dec.), 1925, pp. 209–214.

FOOD AND DRUGS

WALTER S. FRISBIE

Studies on Organisms Concerned as Causative Factors in Botulism—A complete report with tables and an extensive bibliography on the organisms identified with botulism. The subject matter of this bulletin is divided as follows: (I) Cultural and immunological study of strains of organisms concerned in botulism; (II) Further data on type C strains; (III) Properties of toxin and antitoxin of organisms concerned in botulism (personal observation and review of literature); (IV) Standardization of antitoxin.—Ida A. Bengston, *U. S. P. H. S. Hyg. Lab. Bull.*, 136:1–96, figs. 2 (1924).

Iodine Content of the Pacific Coast Salmon—An analysis of 131 samples of canned and fresh salmon showed iodine present in all cases and that canned salmon contained more iodine than butter, milk, meat, vegetables and cereals. Iodine content varies with species and by districts within the species, also variation in parts of the same fish. No essential difference found between the iodine content of fresh and canned salmon; iodine in canners' salt not present in sufficient quantity to increase iodine content of the canned product. Value of salmon in the diet suggested for prophylactic treatment of goiter. Extensive bibliography is appended.—Norman Donald Jarvis, Ray William Clough, and Ernest Dunbar Clark, University of Washington Publications in Fisheries, 1, 6:109–140 (Feb.), 1926.

The Occurrence of Arsenic in Apples—In a paper read at the meeting of the Society of Public Analysts, the author detailed his examination of samples of arsenic contaminated apples. In the case of varieties suspected of poisoning, arsenic was found: 8 parts per million As_2O_3, and lead: 28 parts per million. Examination of further samples showed arsenic content as As_2O_3 from nil to 15 parts per million. Discussing the poisonous symptoms reference is made to the final report of the Royal Commission on Arsenical Poisoning which cites numerous instances of exceptional susceptibility including a case of symptoms following the administration of a single dose of one-fiftieth of a grain. The paper discusses the source of the arsenic in the form of sprays to combat the codlin moth, the chemical composition of the sprays, distribution of the arsenic, and the possibility of its removal by rain. On apples heavily sprayed in the laboratory, the author found appreciable percentages of the total arsenic in the "flesh" of the apple.—H. E. Cox, *The Analyst*, 51:132 (Mar.), 1926.

The Iron Content of Meats—The rôle played by the iron content of foods in the prevention and cure of anemia has led the authors to make definite determinations of the iron content of certain meats and meat products. It was desired to study the relation of the iron content to the protein content of meat owing to the scarcity of information on the subject. Various cuts of pork, lamb, beef and veal, as well as the edible organs of beef were analyzed. Determinations were made of iron, nitrogen, ether extract and moisture. The figures showed close similarity in iron content of all the skeletal muscles studied. The organs were found to contain a much higher content than the muscles and the authors are of the opinion that this should be given consideration as to the utilization of these organs as human food. The beef spleen, liver, kidney and blood were found to contain more iron than any foods of vegetable origin. The beef and veal were found to contain two-thirds more iron than pork and lamb and ten times as much iron as milk.—E. B. Forbes and Raymond W. Swift, *J. Biol. Chem.*, 67, 2:517, 1926.

Crystals Found in Canned Salmon Are Not Glass—The laboratories of the Northwest Branch of the National Canners Association, Seattle, Washington, received complaints that broken glass had been found in canned salmon purchased locally. Several cans were examined and what appeared to be small pieces of broken glass were found. Chemical analyses revealed this material to be soluble in acidulated water, and magnesium, ammonia and phosphoric acid were detected. They were later identified as

magnesium ammonium phosphate. The formation of these crystals is attributed to the fact that the canned fish contains chemical compounds but that the conditions of processing, etc., are seldom such as to produce visible crystals. The laboratory has examined 50,000 cans of salmon during the past 6 years but such crystals were only found in the two recent instances. Similar crystals have also been found in canned tuna and crab.—E. D. Clark and R. E. Clough, *Pacific Fisherman*, 23:11–12 (Oct.), 1925.

The **Phosphorus Content of the Body in Relation to Age, Growth and Food**—Results are given of an investigation of the phosphorus content of the body in relation to age, growth and food; experiments were conducted on albino rats of definitely known family and nutritional history. Tables are given showing the average phosphorus content of normal male and female rats and graphs showing the changes in percentages of calcium and phosphorus according to changes with age. The average percentage of phosphorus in the body of the normal white rat was found to increase from 0.34 per cent at birth to 0.70 to 0.75 per cent in the adult. Variations in the phosphorus content show similar relations to the variations in calcium content reported previously by the same laboratories. Gains and losses of calcium and phosphorus are shown to be chemically independent by determining calcium and phosphorus in animals which received an adequate diet but low in calcium content with and without supplementary feeding of cod liver oil or calcium lactate. Cod liver oil did not increase the storage of either of these elements but storage of both calcium and phosphorus was increased when calcium alone was added to the food. This is a valuable contribution to chemistry of the study of the normal growth and development and suggest its use as a basis for interpretation of experiments in which the development of the body or of the bones is retarded by dietary or other abnormalities.—H. C. Sherman and E. J. Quinn, *J. Biol. Chem.*, 67, 3:667, 1926.

Vitamins in Canned Foods. IV.—Green Peas—"Green peas are to be ranked as a rich source of vitamins A, B, and C, but evidence of D is lacking. Maturity, reflected in size, results in reduction of A and C and increase in B, small peas being richer in A and C and poorer in B than large peas. No cooking or canning process affects appreciably the content of vitamins A and B and, as shown in previous work, canning is less destructive to the C content than is kettle cooking, probably because of the exclusion of oxygen in the canned product. Compared with other sources of vitamins, canned peas are, roughly, at least half the value of butter as a source of A, they are richer in B than milk, tomatoes, or oranges, and about as rich as tomatoes and oranges as a source of C. Blanching is relatively more destructive than processing. Reheating canned peas in an open kettle for serving upon dumping them from the can does not materially reduce the vitamin C content."—Walter H. Eddy, Edward F. Kohman, and Victoria Carlsson, *Indus. & Eng. Chem.*, 18, 1:85 (Jan.), 1926.

Vitamins A, B, and C—This article comprises a table showing the distribution of vitamins A, B, and C in food materials and an extensive list of selected references to the literature reporting the occurrences of these vitamins. —Sybil L. Smith, Bureau of Home Economics, U. S. Dept. of Agri. (1926).

Vitamin A in Oleo Oil and Oleo Stearin—A study of young albino rats of the vitamin A content of 24 samples of oleo oil and 8 samples of oleo stearin obtained from commercial meat packing plants. Five samples No. 1 oleo oil in an otherwise vitamin A free ration produced moderate but not normal growth. Six samples No. 2 oleo oil furnished normal growth in 3 cases. Three samples No. 3 oleo oil found inadequate for normal growth. In these experiments, 20 per cent of oil used in the ration. In the case of yellow oleo oil 5 samples in rations containing 10 per cent of oil induced normal growth in 3 cases and 2 cases nearly normal. Four samples yellow oil, 20 per cent in ration, sufficient vitamin for normal growth in 3 cases and 1 case for moderate growth. Tests on oleo stearin No. 1 found to be very poor in vitamin A. One sample each No. 2 and No. 3 very poor but one sample each contained a fair amount. Each sample yellow stearin richer in vitamin A than any other grades of oleo stearin. The authors observe that although yellow oleo oil is richer in vitamin A than other grades of oil which were lighter, apparently there is no constant relation between the color and its vitamin content. Comparisons with other commercial edible fats and oils prove that oleo oil ranks below butter but ahead of lard and vegetable fats and oils in vitamin A content.—R. Hoagland and G. G. Snider, *J. Agri. Res.*, 32, 5:397, 1926.

CHILD HYGIENE

MERRILL E. CHAMPION, M.D.

CHILD HEALTH THE KEYNOTE

At last the tendency in public health activity is towards beginning at the beginning of things. We have been a long time working back to the health of the child and a longer time still getting to the health of the young child. We are even realizing that there is a further step still which takes us to the prenatal period.

Look at the health of the child from whatever angle you will, this need for early attention is apparent. Take dental care as an example. The best practice now stresses the importance of nutrition and in the prenatal period at that. The child from 2 to 4 years of age is the one on which to concentrate. After 7 years of age the golden opportunity for dental prophylaxis is practically gone. Posture, good food habits, mental hygiene, other health habits—all can be "put across" during the preschool period as at no other time.

All we lack now is the machinery to get things done during the preschool age: something equivalent to the public school system. But perhaps we have emphasized too strongly the need of community machinery. After all, why not the parent, the ultimate source of all responsibility for child health.

Common Sense and the Preschool Child—The preschool age is that period of a child's life when the defects of heredity, and the results of the neglects or the experiments during prenatal care become apparent. It is that period when the child is most frequently affected by disease. And it is during that period that he makes his most concerted effort to develop qualities to carry him on successfully to a healthy youth and adolescence. It is much better to give the child a healthy start by giving him good common sense prenatal care, breast-feeding, early careful supervision, than to attempt to overcome neglect in these phases of his life by later enforced care. We are too eager to succumb to the hasty, over-enthusiastic novel proposals of hygiene and therapy, and we are neglecting the old fashioned régimé that has always been productive of healthy infants. We must spend more time thinking about the mothers who are giving birth to these babies. What is happening that makes even the conscientious incapable of supplying her infant with sufficient breast milk? Is it the character of the life she leads, with its speed, restlessness and numerous complications? Is it the restricted diet she endures during pregnancy in an attempt to keep her from growing overstout, and in an attempt to produce a small baby and thus make labor less

difficult? I believe the latter two conceptions absolutely unsound and unproven. Give the mother good prenatal care and the babies breast feeding and many of our present day problems will disappear.

Infants grow rapidly. Each month brings out facts which were not apparent before. The demands at these periods vary. Disease goes on insidiously. Infants are too young to tell us of the difficulties they are enduring. Many diseases have left their imprint before we have had time to recognize them or to do anything to prevent further damage. It is obvious then that an infant should receive frequent examinations. Because children are so susceptible to disease in their infancy let us protect them early. Give them guaranteed protection against diphtheria and smallpox and possibly scarlet fever in early infancy. Give them a sensible, vigorous, varied plain diet. Give them sufficient daily rest so that they can catch up with the wear and tear to which their growing bodies are subjected.

Roughen and harden them. Do not subject them too much to the untried fads and fancies of our too finely organized and mechanical age.—Eli Charles Romberg, M.D., Boston, Mass.

The Breast Feeding Demonstration and the Practicing Physician—Hand in hand with the reawakening of interest in breast feeding has gone a new development in social medicine—the Breast Feeding Demonstration. The 2 cardinal principles for universalizing breast feeding are (a) completely emptying the breast, and (b) completing the baby's feeding by giving him as much as he wants of a completing or complementary feeding. The 3 essentials for conducting a breast feeding demonstration in a community are: (1) an interested and informed group of doctors; (2) the birth-recording bureau of the health department; and (3) a body of nurses for visiting newly-made mothers to instruct them in accordance with the doctors' orders, how to nurse their babies.

It has been easy to get brilliant results as long as the demonstration was in force, wherever put on. But the results in the years following the termination of organized effort have been disappointing. It seems that the doctors as a body have not become acquainted with the details of the work, so that they would and could carry it out in their own practices. How can this be overcome?

In the Nassau County, Long Island, Demonstration, a step in the right direction was taken, by establishing a rule that no nurse should call upon any mother without obtaining the consent and the instructions of the doctor who had signed the birth certificate. This did away with much of the opposition encountered elsewhere. In the "daughter demonstration" put on in various parts of New York state a second step has been taken in that in every case the demonstration has been put on in response to a definite invitation extended by the local unit of organized medicine.

There remains a third step to be taken and the success of the breast feeding demonstration is assured. This step is now being urged in the case of two of our largest cities that are considering initiating such demonstrations. It consists in bringing before the members of the local medical organization the whole subject of breast feeding, as part of the graduate medical education movement that is now sweeping all over the country. In this way the technic of breast feeding, its almost universal applicability in the hands of men who understand this technic, its possibilities, its advantages, as well as difficulties, all become matters of common knowledge to the men who must eventually carry on the work in their own community, if it is to be carried on at all. Such teaching must be clinical as well as didactic. Most important of all is the fact that the teaching is offered by the physicians' own organization and not by any outside agency, no matter how well meaning. Doctors are unusually eager for graduate education; but they want to initiate their own betterment, and they object to "being done good to."

This teaching is now in contemplation by one of our largest cities as a component part, possibly a preliminary part, of its projected Breast Feeding Demonstration. This should mean even better figures for future years than those obtained during the artificially stimulated years of the demonstration itself. In no other way can the results of such a demonstration become permanent.—Frank Howard Richardson, M.D., Brooklyn, N. Y.

Health Habit Promotion in the Preschool Years—Can health habits be taught before the child enters school? Yes, they can and should be. Teaching should begin in the cradle. The younger the child, the easier it is to establish regular health habits, and to train the child so that he enjoys healthful habits.

A great deal, of course, must be done by good example. The mother and father who refuse oatmeal, or openly remark that they "never could eat vegetables" should not be surprised if their children refuse these foods. Food served attractively should be an everyday performance, not a party whim. It is the parents' job to direct the table talk away from a discussion of the food, into channels conducive to healthy appetites.

Again, what is the child given to play with? Given work to do with his hands, the child's mind becomes engaged in interesting problems of construction. The child with the ready-made-to-order toy will soon tire of it and whine for something to do.

Perhaps most important of all, the parents can do health teaching by answering questions intelligently. Patience and interest on the part of the parent bring results, for out of these answers to his questions the child is building his attitudes toward and his understanding of life, and the earlier this orderly process is begun the better.—Frances Klein, Boston, Mass.

IMMUNIZATION—ITS VALUE FOR THE PRESCHOOL CHILD

Smallpox—Immunization or vaccination against this disease was first done by Edward Jenner, May 14, 1796, 130 years ago. Its value has been proved. The best time to vaccinate a child is when it is 2 months old. The child lies quiet in its bed and cannot injure its arm in play. The arm will not be so sore at this age. The immunity of the child should be retested when it enters school.

Diphtheria—Immunization by means of toxin-antitoxin is a tried and safe method. Using this method in a small city in New York, Sears has all but done away with the disease. The best time to have a child immunized is shortly after it is 6 months old. Furthermore, the preschool child is much more likely to die of diphtheria. Therefore, the sooner a child is protected after it reaches 6 months the better.

Scarlet Fever—The use of Dick toxin for the production of immunization against this disease holds great promise. Proper doses of toxin, properly spaced, will give a certain amount of immunity to scarlet fever. The time has been too short, however, for us to know how long this immunity will last. Because of the possibility of disappointing or embarrassing results, it seems unwise at this time to apply immunization against scarlet fever to the general population.*

Measles—Immunization by means of convalescent measles serum has been used successfully to prevent or modify the disease. It is given during the 7 days after the first exposure. If protection is complete, the immunity lasts for about a month. In a single outbreak of measles this is usually time enough. In modified cases the disease is mild and has no complications. Furthermore, these mild cases acquire a lasting immunity. A serious drawback to this method is the difficulty of getting serum.—Clarence L. Scamman, M.D., Boston, Mass.

Irradiated Foods Have Added Antirachitic Value—Large numbers of city dwellers suffer from too little exposure to light. For this reason artificial light therapy has a wide sphere of usefulness. These conclusions are reached by Dr. Helen M. M. Mackay of London and Harold F. Shaw of Manchester, England, in a study recently reported in *The Lancet* on the irradiation of foodstuffs with ultraviolet light. Bit by bit scientific knowledge is accumulating to build up a better understanding of the physiological effects of light, of the dosage of light necessary to achieve a given therapeutic effect, and of the groups of rays applicable under different conditions.

Work on the subject has been complicated by the fact that certain groups of light rays interfere with the action of others. Many conflicting observations have been made in the attempt to explain the curiously parallel action of light and cod-liver oil. And Steenbock, Black, and Hess had the utmost difficulty in finding reasons why the presence of irradiated rats affected favorably the growth of non-irradiated animals living in the same cage when all were on the same diet, one deficient in the antirachitic factor.

It is in studies of the light treatment of 2 diseases, rickets and infantile tetany—particularly rickets which can readily be studied in connection with X-ray pictures—that the mode of action of light is being developed. In the case of the irradiated laboratory rats which seemed to distribute health to other rats in the cage fed on deficient diets, it was found that irradiated foods had turned the trick. It has

* The curative value of scarlet fever antitoxin is unquestioned. It should be used as a prophylactic measure only under exceptional circumstances.

been shown that under the influence of light 2 chemically pure substances, cholesterol obtained from animals and phytosterol obtained from plants acquire antirachitic properties under the influence of light. Moreover, the skin of an irradiated animal has antirachitic properties when fed to a rat on a rachitic diet. The skin contains cholesterol. "Presumably, therefore, both in the living animal exposed to ultraviolet light and in antirachitic foodstuffs, the antirachitic property resides in the cholesterol and phytosterol, and possibly in similar substances," state Dr. Mackay and Mr. Shaw. In either case an activated lipoid results which the animal is able to use whether it is supplied via the skin or the alimentary tract. It is an antirachitic factor which is concerned. Light treatment does not compensate for vitamin *A* shortage.

The authors go on to report the clinical value in the treatment of rachitic children of using certain irradiated foodstuffs. Children, whose ages ranged from 7 months to 3½ years, on 3 types of ordinary hospital diets varying according to age group of children under observation, had their daily rations irradiated for 1 hour by placing a 24 hour supply in a thin layer under a mercury vapor quartz lamp at a foot distant from the burner. Control observations were made throughout the experiment on children in the same ward who had no part of their food irradiated.

On the future value of irradiated foodstuffs the authors state "that 2 minutes irradiation will activate linseed oil; that irradiated olive oil can be kept for a period of at least 10 months, linseed oil for 6 months, and still possess antirachitic power." There is little doubt, they say, that when it becomes possible, certain foods will be irradiated on a commercial scale. "Among the substances activated in greater or less degree by different workers are muscle, liver, skin, milk, butter, lard, egg yolk, crude casein, yeast, a variety of vegetable oils, including olive oil, cocoanut oil, cottonseed oil, linseed oil, and corn oil, as well as various cereal substances, including wheat, wheat flour, Indian corn, corn starch, and rolled oats. It is obvious that only foodstuffs with keeping qualities are likely to be treated on a large scale.

"At present it is certainly desirable to give every artificially-fed infant and many breast-fed infants cod-liver oil daily throughout the winter, since ordinary foodstuffs, even breast milk, will not insure protection to an infant living an indoor life and getting very little ultraviolet light."

It is rare to find a case of active rickets in late summer on any diet, as by that season increased exposure to light out of doors has established the normal process of calcification of bones.—*Nation's Health*, Apr., 1926.

"Tell Your Children the Truth"—The Canadian Social Hygiene Council tries to lighten the responsibility of parents by giving them in brief form suggestions as to how to handle the problem of social hygiene as it applies to their children. Social hygiene is declared to be wider in its connotation than public health in that it extends its field to include the factor of eugenics.

Beginning with a discussion of Nature and Nurture, the necessity of being well born and the factors of heredity and environment are taken up. The mechanisms of behavior; the different kinds of behavior; instincts; habits, physical, mental and moral, are touched upon in some detail. The parents' task in training the child comes next, with some good advice about the need of allaying the child's natural curiosity about birth and the facts of sex hygiene, and some suggestions as to ways of accomplishing this. A bibliography of literature for parents is appended.

On the whole this simple little pamphlet, while containing of course nothing particularly new—what pamphlet does contain much that is new in these days of much printing?—will be of real service to parents anxious to help their children with certain of their problems but not knowing how to go about the task.

The Summer Round-Up of the Children for 1926—In 1925 the National Congress of Parents and Teachers inaugurated a campaign to send into the first grade of school a class of children 100 per cent free from remediable defects. The outcome last year encouraged the association to make the campaign, appropriately termed "The Summer Round-Up," a permanent activity. This year an appeal has gone forth far and wide to make an even more successful job of it.

Theoretically speaking, the prospect of improved health for the children ought to be sufficient incentive, but to make assurance doubly sure, prizes are being offered to the local parent-teacher associations which come the nearest to attaining the goal set forth above.

Truly, this is a most encouraging departure which will in time go far towards focussing attention on the all important preschool child.

Types and Treatment of Influenza—The types of influenza as observed in a recent epidemic which attacked largely infants and young children, as set forth in "Influenza in Infants and Young Children," by James Burnett, M.D. (Edinburgh), were (1) *Catarrhal*—the most common. These cases had the greatest tendency to develop otitis media. (2) *Cerebral.* Range of temperature invariably high. In all the cases seen by Dr. Burnett the thermometer registered 105.5°. (3) *Colic* (6 cases). This type was quite out of the ordinary and began with colicky pain in the umbilical region. (Detail of 10 cases given.) Vomiting never occurred and there was no diarrhea.

Treatment is simple in all types and consists of keeping the little patients in bed during the attack and for some days after the temperature has become normal, giving the appropriate remedies for fever and cough and during convalescence, and taking steps to prevent infection of the eustachian tube and middle ear. Warm linseed poultices are suggested as useful in relieving pain.—*Arch. Pediat.*, Apr., 1926.

Midwifery Supervision Succeeds in New Jersey—Under the above title many telling facts are cited with relation to the control of the midwife situation in New Jersey. The State Department of Health began its supervision of the midwife 7 years ago. Under this supervision apparently the midwife has greatly improved in the quality of service rendered while the number of midwives has decreased as has also the proportion of births delivered by midwives. We are reminded, moreover, that the influence for good exerted by the well supervised midwife upon the after care of the baby is far from negligible. In fact, it is in this phase of the work which in the opinion of the writer supervision has accomplished its best results.

In 1918 at the time when New Jersey began supervision of midwives there were approximately 450 licensed midwives in addition to some 500 unlicensed women. In 1919 the midwives delivered about 40 per cent of the total births. In 1924 midwives delivered only 23 per cent. Their number, meanwhile, has been reduced to 387 licensed midwives. The unlicensed one has been practically eliminated.

The midwives are organized into county associations and one state-wide conference has been held with an attendance of 250 licensed midwives.

The method employed in establishing supervision consists in placing each of 12 districts in charge of a supervisor. Each supervisor makes monthly visits upon all midwives in her district. All puerperal deaths, infant deaths and stillbirths attended by these women are investigated.

The reports of the supervisors show that 77 per cent of these midwives are now reporting abnormal cases to the district supervisor, that 78 per cent are taking temperatures for 5 days following delivery, and that 81 per cent are carrying properly equipped bags as specified by the department.

Midwives in New Jersey to-day obey the law and follow the rules of the State Department of Health. They attend the meetings of their county associations, they use silver nitrate in the eyes of new-born babies, they urge their prospective patients to go to a clinic for a prenatal examination where such services are available, they call a physician when abnormalties are encountered, and, what is most important, they teach the mother the rudiments of child care.—*Nation's Health*, Apr., 1926.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

METHODS AND PROBLEMS

How to Improve the Monthly Report to the Board of Trustees, by V. R. Hoener. *Modern Hospital.* Sept., 1925. The report helpful to the board will provide authoritative material for publicity.

Lantern Slides: How to Make and Color Them. Eastman Kodak Co., Rochester. Free.

Recent Tendencies in Fund-Raising, by J. C. Brown. *Woman's Press.* Oct., 1925. How the increase in money raising campaigns necessitates better personal and group methods.

Style Sheet, by Course in Journalism, University of Wisconsin. Free, if you send addressed and stamped envelope to Professor Willard G. Bleyer, Madison, Wis. If your local newspaper has no style sheet the one from the U. of W. will be a good guide. Ask your editor to indicate any variations in his practice.

The Travelers Standard, Travelers Insurance Co., Hartford. Monthly illustrated discussion of safety problems in industry. Free.

CAMPAIGNS

Pre-School Drive, California, Spring of 1926. "To urge parents of children who enter school for the first time next September to have these children in the best physical condition possible." Address Guy P. Jones, State Department of Health, State Building, San Francisco, for press releases, letters to local campaign leaders, etc. Mr. Jones writes: "We are working this year, through local publicity chairmen, for the most part. I think we may get better results than by mailing direct to newspapers. We depend upon these chairmen to develop the local news in connection with the drive. Our material is expository, and some of it is designed for use as editorials." This seems sound practice in the light of other efforts to secure local publicity.

"An educational campaign to be carried on throughout the United States in the immediate future." Address American Society for the Control of Cancer, 25 West 43rd St., New York. "The campaign this spring will not be of the 'cancer week' variety but of a longer and less intensive character."

MOTION PICTURES

He Who Laughs Last, by New York Tuberculosis and Health Association and New York County Medical Society. Producer: Carpenter and Goldman, New York. Periodic health examinations. An edition for physicians and one for lay groups. 1,200 feet. $100. Address: New York Tuberculosis and Health Association, 244 Madison Ave., New York.

Le bon et le mauvais laitier (The good and the bad dairy-farmer), by Jean Benoit-Lévy. Issued by Office Agricole de Seine-et-Oise. 600 metres. "An elementary course in milk hygiene." Synopsis in *World's Health.* April, 1926.

EDUCATIONAL MATERIAL

Children's Bureau and Other Publications Relating to Children. List of publications for sale. Revised edition. Superintendent of Documents, Washington, D. C. Free.

Concerning Bathing and Bathtubs: Their Development from Dubious Luxuries, by Mary A. Clarke. *Trained Nurse and Hospital Review,* New York. Apr., 1926. Good material for speakers and writers.

Good-Fitting Shoes for Every Member of the Family, by Gladys L. Meloche. College of Agriculture, University of Wisconsin, Madison, Wis. 12-page pamphlet. 15 illustrations. 3 cents per copy in quantities. 10 cents single copy.

Half a Dozen Health Hints, by P. Plumereau. "Don't breathe in dust!" "Wash thoroughly!" "Wash hands before meals!" and "Play in the open air!"—These words are the entire text on the series of six posters issued by Librairie Armand Colin, Paris. Miniature colored reproductions in *World's Health,* 2, Avenue Velasquez, Paris. Apr., 1926. 10 cents.

Safetyize! National Safety Council, 108 East Ohio St., Chicago. 48-page pamphlet,

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

4½ by 6¼ inches, illustrated in color. "A little book on accident prevention in the home"—and elsewhere.

Some Publications Suitable for General Distribution. List of free and for sale publications. U. S. Public Health Service, Washington, D. C. Also in *Public Health Reports*. Apr. 16, 1926.

252 Selected Safety Posters: Catalogue for 1926. National Safety Council, 108 East Ohio St., Chicago. Free.

PEOPLE WE KNOW

Dr. Harriet Stevens Cory is now education director of the Missouri Social Hygiene Association.

Miss Anna M. Drake has been appointed assistant secretary and director of health education for the Cincinnati Public Health Federation, succeeding Miss Mary L. Hicks, who resigned to become director of the Louisville Health Council.

Dr. W. W. Peter, Council on Health Education, China, after visiting public health centers in Geneva, Paris and London, expects to reach New York early in September on his way to New Haven where he plans to spend 2 semesters under Professor Winslow.

Dr. Benjamin S. Stephenson is chief of the Bureau of Health Education of the Ohio State Department of Health, succeeding Dr. H. E. Kleinschmidt, promoted to chief of the Division of Child Hygiene.

Arthur W. Towne, Onondaga Health Association, Syracuse, is chairman of Committee on Health, New York State Conference of Charities and Correction.

CONTESTS

Chicago's Third Annual First Aid Contest Before 7,000 "Rooters." *Red Cross Courier*, Washington. May 1, 1926.

Making Each Month's Record Better Than Last Year's. *National Safety News*. Feb., 1926. Illustrates a board with miniature automobiles recording the comparative standards of teams competing for a safety record. Applicable to other contests.

"The American Hospital Association has arranged for the issuance of a certificate of award to be given the hospital where the Hospital Day Program is considered the most meritorious. To compete for this award hospitals are requested to send to the Association complete details of programs, newspaper publicity, local functions connected with the celebration, and any other material which indicates the effectiveness of the local propaganda. The members of the National Hospital Day Committee will be the judges and the award will be made at Atlantic City, on the night of Sept. 28, 1926."

POPULAR ARTICLES

Health articles in the popular periodicals sometimes contain material suitable for reprinting in health bulletins or as leaflets. Some of these articles illustrate a style of writing that will win readers.

Do We Want More Smallpox? Editorial. *Saturday Evening Post*. March 27, 1926.

Eating to Win, by Grantland Rice. *Collier's*. Dec. 5, 1925.

The Motor Massacre, by William L. Chenery. *Collier's*. March 27, 1926. With cartoon.

Hygeia, 535 North Dearborn St., Chicago, of course, contains a varied selection of popular health material in every monthly issue. Reprinting of much of the material is facilitated by a clip sheet which will be mailed regularly in advance of publication of the magazine if you ask for it.

TITLES

"Somebody's John and Somebody's Mary"—Illinois Social Hygiene League.

"The Health Social Calendar"—Connecticut State Department of Health.

"The Story of 'Mack' the Masseur"—Illinois Social Hygiene League.

DATES AHEAD—JULY, 1926

1—Dominion Day (Canada).
4—Independence Day.
4—150th Anniversary of the signing of the Declaration of Independence.
4—100th Anniversary of birth of Stephen C. Foster, author of "My Old Kentucky Home," "Old Black Joe," and "Way Down Upon the Swanee River."
14—Bastile Day.
15—St. Swithin's Day.

A Place on the Program—Now is the time to check up possibilities for addresses, study courses, or special presentations of health material to groups planning programs for the fall and winter. Many of the more progressive women's clubs, particularly those which issue a detailed printed program for a year ahead, are now busy with their plans for the coming season.

Public **Affairs Information Service**—This "is an association of individuals and institutions organized to provide coöperatively an indexing and information service in the field of public affairs." The information is issued in the form of monthly, quarterly and annual bulletins which list periodicals, reports and publications not covered by other reference publications usually to be found in public libraries. The publication committee writes that they "wish to receive all reports and pamphlets issued by health, child welfare, family welfare and other social work agencies. They also would like to receive all weekly or monthly periodicals which contain articles of permanent value, or of sufficient length to warrant an investigator in going to the trouble of securing a particular issue." By sending your publications to the Service, at 11 West 40th Street, New York, they will be brought to the attention of public, college, state and special libraries, and to research agencies and others interested. (*This paragraph is one of a series on opportunities for special use of publications.*)

Newspaper for Promoting an Event—*The Children's Day Herald*, dated Children's Day, 1926, takes the place of circulars and handbooks for announcing the event, advertising the supplies, and detailing plans for this year's Children's Day in the Methodist Church. It is an 8-column, 4-page sheet set up in usual newspaper style. The idea may be adaptable to other uses. For samples address Dwight Furness, Board of Education, 150 Fifth Avenue, New York.

St. **Paul Advises Health Speakers and Writers**—A thought-stimulating department in *Printer's Ink* is "The Little Schoolmaster's Classroom." A recent "lesson" seems to carry a message for health workers.

"'What book or books can I read that will help me in my style and give me dependable rules to guide me in my writing?'

"The Schoolmaster was asked this question the other day by an aspiring copy writer. It is an exceptional week when similar inquiries are not recorded.

"To the young man in question the Schoolmaster said:

"'Read the Bible.'

"The Bible is a good advertising text book because it contains not only examples of the most brilliant and forceful style but has the rules as well.

"For rules to guide the copy writer the young man in question was referred to the fourteenth chapter of St. Paul's first letter to the Corinthians, beginning with the sixth verse." The Schoolmaster quotes the reference in full, but we leave to JOURNAL readers the joy of discovery. "What can be better?" adds the Schoolmaster. "St. Paul tells the whole story here."—*Printer's Ink*, Apr. 29, 1926.

Why Not Elsewhere?—"Several seasons ago the Crandall Theaters in Washington established a public service and educational department for the free showing of civic and welfare films for community education." In addition to making and exhibiting pictures to aid in extending playground facilities "films illustrating the work of the welfare organizations of the city have been shown at various times. During the present season the Children's Bureau films 'Well Born' and 'Our Children,' as well as other health films, were shown at morning meetings under the auspices of the National Congress of Parents and Teachers held in the neighborhood motion picture houses under Crandall management. The policy of the theater has been to coöperate with the social, civic, and educational groups, including the schools, by making their houses available during mornings to these organizations."—Children's Bureau.

"Mrs. Ever Well" at the County Fair—"Mrs. Never Well's Medicine Chest" and "Mrs. Ever Well's Medicine Chest" were the basis of a novel nutrition exhibit prepared recently by extension workers in Connecticut, coöperatively directed by the State Agricultural College and the United States Department of Agriculture. It was planned to emphasize the importance of eating more vegetables and fruits instead of depending on patent and other medicines to keep well.

The center of interest was an arrangement of two sets of contrasting shelves, connected by signs which indicated "Iron tonics and blood purifiers," "Headache cures," "Cathartics," "Antiacids," "Anti-fats," and "Cough cures," topped by the question, "Which is yours?" On one side the shelves contained typical medicines often taken under these heads. This was "Mrs. Never Well's Medicine Chest." On the other side a corresponding shelf showed Mrs. Ever Well's "cures," consisting of fruits, vegetables, and whole cereals considered valuable in place of drugs and medicines.

For example, opposite "Iron tonics and blood purifiers," the shelf showed spinach, Swiss chard, raisins, and prunes. Among the laxative foods were bran, figs, oatmeal, spinach, apples, rhubarb, prunes, tomatoes, apricots. Milk, celery, carrots, turnips, beets, and string beans were presented as good antiacid foods.

Signs placed below the display urged sick people to consult the family physician rather than to attempt to prescribe for themselves, and advised everybody to eat more vegetables and fruits and take less medicine. Among the many interested persons who visited the booth and studied it carefully, it was noted that men predominated, and asked more questions than women, apparently with lively hopes of reducing expenses for sickness.—Clip Sheet of U. S. Department of Agriculture.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

Federal Health Correlation—No action had been taken on the Parker bill (H.R. 10125) for the correlation of federal health activities up to May 13, nor is any action likely at this session of Congress. The measure is said to have the sanction of 3 cabinet officers, but the Director of the Budget has withheld his approval of it. The bill, by providing for certain desirable changes in the personnel of the Public Health Service, involves a small increase in expenditures and this is said to be contrary to the President's financial policy. In view of this lack of approval by the Bureau of the Budget, the committee of the House, to which the bill has been referred, will probably not be inclined to take action, though it is possible that hearings may be held. This temporary setback does not mean that eventually correlation of federal health activities will not be secured.

A reprint from the *Boston Medical and Surgical Journal* regarding the Parker bill and federal health correlation generally will be sent by the associate editor to anyone who would like to have it.

Other Federal Health Legislation—A number of hearings have been held and committee reports made since the last issue of the JOURNAL.

The bill for a department of education, with a secretary in the cabinet, was reported adversely on May 4 by the committee on education of the House, while the Senate committee on education and labor reported a substitute measure for this bill on May 5. Proponents of this department may, however, get action on the floor, at least to the extent of debate.

A bill (H.R. 9055) to regulate chiropractic in the District of Columbia has been favorably reported to the House. This legislation would grant licenses without examination to members of the cult who had been practicing for 2 years, regardless of their ability. Preliminary hearings on a bill to license osteopaths, held by the Commissioners of the District of Columbia on May 4, showed that there are 3 different osteopathic societies in Washington, all at variance as to the merits of the measure.

Hearings on a bill (S. 2957) to prohibit experiments on dogs in the District of Columbia and the territories began on May 4 and continued for several days. The usual type of deluded and malevolent anti-vivisectionists appeared in favor of the bill. Leading physicians and scientists, including representatives from the Bureau of Chemistry and the Bureau of Animal Industry, opposed it.

A bill (H.R. 6728) to regulate the use of milk containers in the District of Columbia has been favorably reported to the House.

New Health Legislation in Congress—Several new bills of interest to sanitarians have been introduced in Congress as follows:

Milk—S. 4126, H.R. 11768. These bills would prohibit the importation of milk or cream into the United States unless the shipper held a permit from the Department of Agriculture. Sanitary requirements for such milk are laid down in the bill, the purpose of which is to protect public health.

Safety—A division of safety would be created in the United States Bureau of Labor Statistics by S. 3983 and H.R. 11886.

Narcotics—Senator Smoot has introduced a bill, S. 4085, to strengthen the Harrison Narcotic Act of 1914, as amended. The bill deals mainly with registration requirements of physicians.

Mosquitoes—An appropriation of $25,000 would be made available to the Public Health Service for a survey of salt-marsh areas of the Gulf and South Atlantic states, to determine the character of breeding places of mosquitoes, according to the terms of H.R. 11522, introduced in the House on April 22 by Mr. Wilson of Mississippi.

A Model School Hygiene Law—Senator Capper and Representative Begg have introduced bills, S. 4051 and H.R. 11836, to establish a bureau of school hygiene in the health department of the District of Columbia. This proposed legislation, after setting forth in admirable fashion the functions of the bureau, provides for scientific personnel in certain ratio to the school population. Thus there would be a chief of the bureau and: (a) one medical inspector (part-time) for each 3,200 pupils; (b) a supervising nurse and one full-time nurse for each 2,000 pupils; (c) one dentist (part-time) for each 9,000 pupils; and (d) one full-time dental hygienist for each 6,000 pupils. This bill is designed to provide permanently for school hygiene in the nation's capital, which at present has less than half the personnel needed for this work.

Reorganization of Indian Medical Service—The Secretary of the Interior, Dr. Hubert Work, has finally enlisted the aid of the Public Health Service in the much needed reorganization of the medical division of the Office of Indian Affairs. The Surgeon General has detailed Surgeon M. C. Guthrie to aid in this work. It is planned to divide that part of the country where the Indians are into 4 districts, with a medical director in charge of each.

On April 23 Congressman Frear made another vehement attack on the administration of Indian affairs generally, devoting some withering remarks to disease conditions. He quoted Dr. Haven Emerson, Dr. C. A. Harper of Wisconsin, and officials of the California State Health Department in regard to conditions.

Politics and the Public Health—A county health officer in Arizona has recently won a prize of $50 for the "best" definition of a Democrat with a capital D. Senator Heflin of Alabama, who is rumored to be a member of the Democratic party, had the definition placed in that well known, but little perused magazine called the *Congressional Record*. For the edification of all sanitarians, the health officer's definition is hereby reproduced. "A Democrat is one who believes in the fullest freedom of speech, press and religion; the separation of church and state; laws that bear equally upon all classes without special privilege or monopolistic advantage; rights of states guaranteed by the Constitution and less national paternalism." There does not seem to be anything about health in this health officer's definition. Possibly that will be included when a local health officer of Pennsylvania pauses for a few minutes from his duties in behalf of a community vitality and enlightens the world as to what is a Republican (with a capital R).

Vaccination Upheld in Iowa—Through the courtesy of Dr. Don M. Griswold of Iowa, there has been received a copy of a decision of March 16, 1926, of the Supreme Court of that state regarding vaccination. In this case, Baehne v. School District of Manly, the plaintiff brought suit to enjoin the enforcement of an order of the school board making vaccination prerequisite for admission to schools. There was no dispute as to the existence of smallpox to a dangerous degree in Manly at the time. The District Court refused to grant the injunction and this action was upheld on appeal by the Supreme Court, though more than a year later. This case reaffirms what is quite generally an established legal principle in this country, that when there is actual danger from smallpox, health or school officials may, in accordance with state laws, require vaccination as a condition for school attendance.

Dr. Griswold has issued an excellent summary of this case, with suggestions for action by local authorities. It is *Health News Letter No. 18* of the Iowa Health Department.

Control of Examinations of Food Handlers—Dr. Louis I. Harris, Health Commissioner of New York City, has kindly sent us information regarding an interesting court decision in New York City. The right of a certain physician to examine food handlers was questioned by the health department on account of obvious irregularities in his methods. Due to his non-compliance with the rules, the department refused to issue food handlers' cards to the patients of this physician. The doctor thereupon brought

an action of mandamus to compel the issuance of such cards, but the Supreme Court of New York refused to grant the writ and sustained the contention that the rules must be followed. The case, Unger v. the Department of Health, is reported in the *New York Law Journal* for March 3, 1926. Since this case came before a court of general jurisdiction, it may be appealed to the higher courts of the state.

Quarantine of Venereal Disease—The District Court of Appeal of California for the first district denied an application for a writ of habeas corpus to secure the release of a person quarantined for venereal disease in the case of Ex parte Fisher (239 Pac. 1100). The woman in question had been isolated by the health officer of San Francisco and this action was upheld by the court as reasonable and proper.

Miscellaneous Items—The United States Bureau of Entomology has issued a pamphlet entitled "Airplane Dusting in the Control of Malaria Mosquitoes" (*Department Circular 367*). It was prepared by W. V. King and G. H. Bradley, associate and assistant entomologist, respectively.

Major General M. W. Ireland has been reappointed Surgeon General of the Army for 4 years by President Coolidge. This appointment was confirmed by the Senate on April 8.

Surgeon General H. S. Cumming of the Public Health Service sailed for Europe on April 17 to attend the meeting of the International Sanitary Conference in Paris. Dr. S. B. Grubbs was acting Surgeon General in his absence.

The Public Health Service has issued tentative regulations for the manufacture and sale of tetraethyl lead in gasoline and for the sanitation of garages.

The United States Children's Bureau has issued a statement regarding juvenile delinquency. This may be found in the *Child-Welfare News Summary* for April 24, 1926.

A comprehensive article on sterilization of mental defectives, by Burke Shartel, appears in the *Medico-Legal Journal* for January-February, 1926. This is also printed in the *Journal of Criminal Law and Criminology*.

Federal Correlation Again—Attention is invited to the fact that in the notes above, containing material regarding public health and of interest to sanitarians, the following different bureaus of the federal government are mentioned: Public Health Service (Treasury), Children's Bureau (Labor), Labor Statistics (Labor), Internal Revenue (Treasury), Entomology (Agriculture), Chemistry (Agriculture), Animal Industry (Agriculture), Home Economics (Agriculture), Education (Interior), Indian Affairs (Interior), and the War Department. Each of these bureaus, and many others, are concerned with public health. It is not unreasonable to suppose that their more effective correlation might conduce to efficiency.

CONVENTIONS

June 1–3, American Neurological Association, Atlantic City, N. J.

June 2–3, American Otological Society, Montreal, Canada.

June 3–5, American Association for the Study of the Feeble Minded, Toronto, Can.

June 3–5, American Laryngological Association, Montreal, Can.

June 5–7, Conference of State Sanitary Engineers, Buffalo, N. Y.

Week of June 7, American Water Works Association, Buffalo, N. Y.

June 7–11, American Psychiatric Association, New York, N. Y.

June 11, American Psychopathological Association, New York, N. Y.

June 10–12, American Therapeutic Society, Philadelphia, Pa.

June 12–19, American Association of Engineers, Philadelphia, Pa.

June 14–16, American Ophthalmological Society, Hot Springs, Va.

June 26, Eugenics Research Association, Cold Spring Harbor, N. Y.

June 28–July 3, American Home Economics Association, Minneapolis, Minn.